

PRELIMINARY

TC-651

General Export Model



Set using ISO screws

SPECIFICATIONS

Power Requirements:	AC 100V, 110V, 117V, 120V, 125V, 220V and 240V (Changeable by using the voltage selector) 50/60 Hz, 85W	Two LINE INPUTS Impedance : 100 kΩ Maximum sensitivity : 70 mV (-22 dB)									
Track System:	Four-track stereo and mono	REC/PB connector Impedance : 80 kΩ Maximum sensitivity : 30.5 mV (-28 dB)									
Reel Size:	7" maximum	Outputs: Two LINE OUTPUTS Impedance : 100 kΩ Output level : 0.775V (0 dB)									
Tape Speed:	7½ ips and 3¾ ips (19 cm/s and 9.5 cm/s)	REC/PB connector Impedance : 100 kΩ Output level : 0.775V (0 dB)									
Recording Time: (with 1,800 ft. tape)	<table border="0"> <thead> <tr> <th>Tape speed</th> <th>4-track stereo</th> <th>4-track mono</th> </tr> </thead> <tbody> <tr> <td>7½ ips (19 cm/s)</td> <td>1.5 hrs</td> <td>3 hrs</td> </tr> <tr> <td>3¾ ips (9.5 cm/s)</td> <td>3 hrs</td> <td>6 hrs</td> </tr> </tbody> </table>	Tape speed	4-track stereo	4-track mono	7½ ips (19 cm/s)	1.5 hrs	3 hrs	3¾ ips (9.5 cm/s)	3 hrs	6 hrs	HEADPHONE output Impedance : 8Ω load Output level : 0.038V (-26 dB) with 8Ω load (when line output level is 0 dB.)
Tape speed	4-track stereo	4-track mono									
7½ ips (19 cm/s)	1.5 hrs	3 hrs									
3¾ ips (9.5 cm/s)	3 hrs	6 hrs									
Frequency Response: (with standard tape)	20 ~ 25,000 Hz at 7½ ips (19 cm/s) 30 ~ 18,000 Hz at 3¾ ips (9.5 cm/s)	Semiconductors: 74 transistors and 92 diodes									
Signal-to-Noise Ratio: (with standard tape)	54 dB	Dimensions: 16⁵/₈ (W) x 18 (H) x 9⁹/₁₆" (D) (422 x 457 x 243 mm)									
Flutter and Wow:	0.04% at 7½ ips (19 cm/s) 0.08% at 3¾ ips (9.5 cm/s)	Weight: 44 lb 8 oz (20.2 kg)									
Recording Bias Frequency:	Approx. 120 kHz										
Inputs:	Two MIC inputs Impedance : 600 Ω Maximum sensitivity : 0.2 mV (-72 dB)										

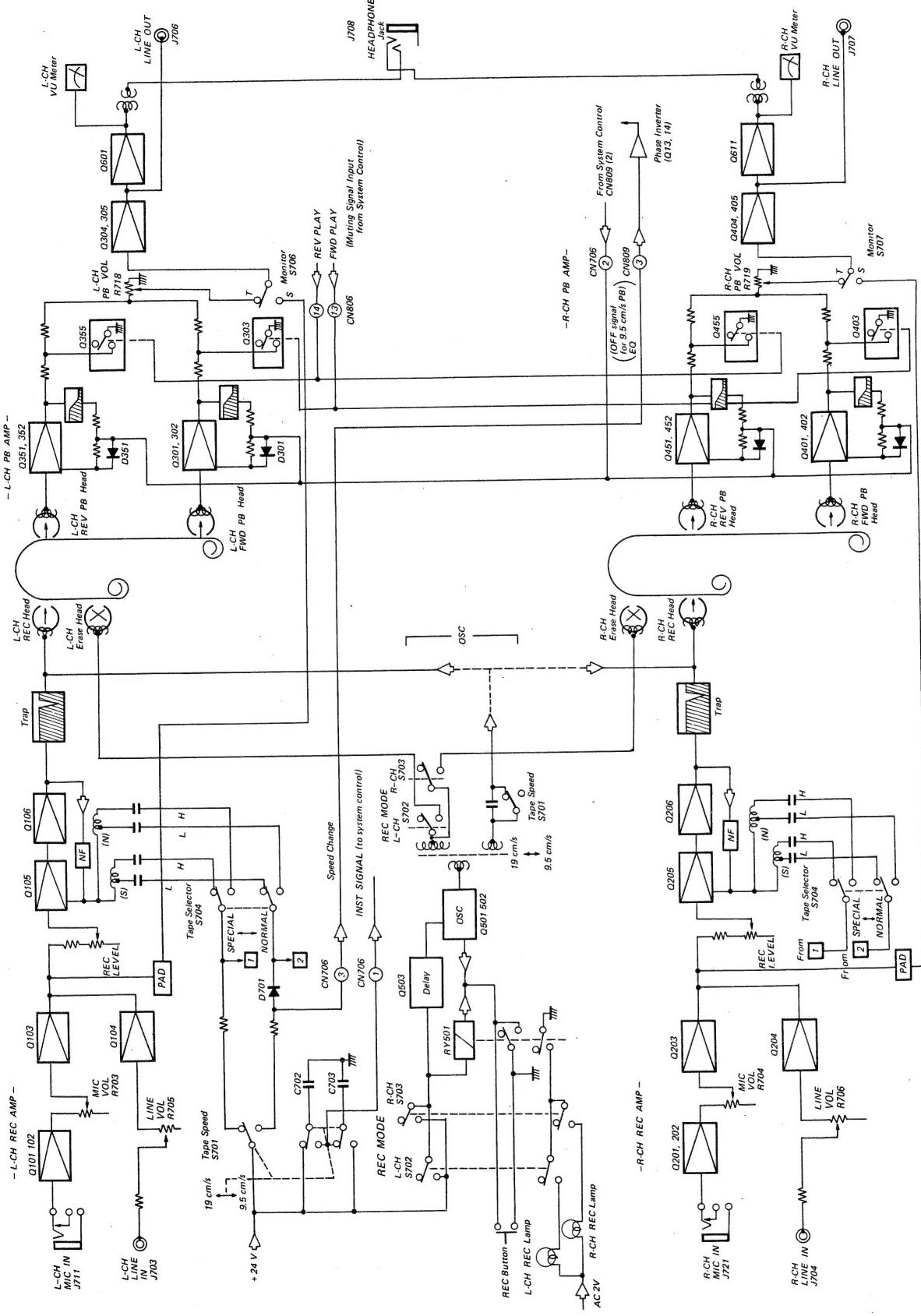
SONY®
SERVICE MANUAL

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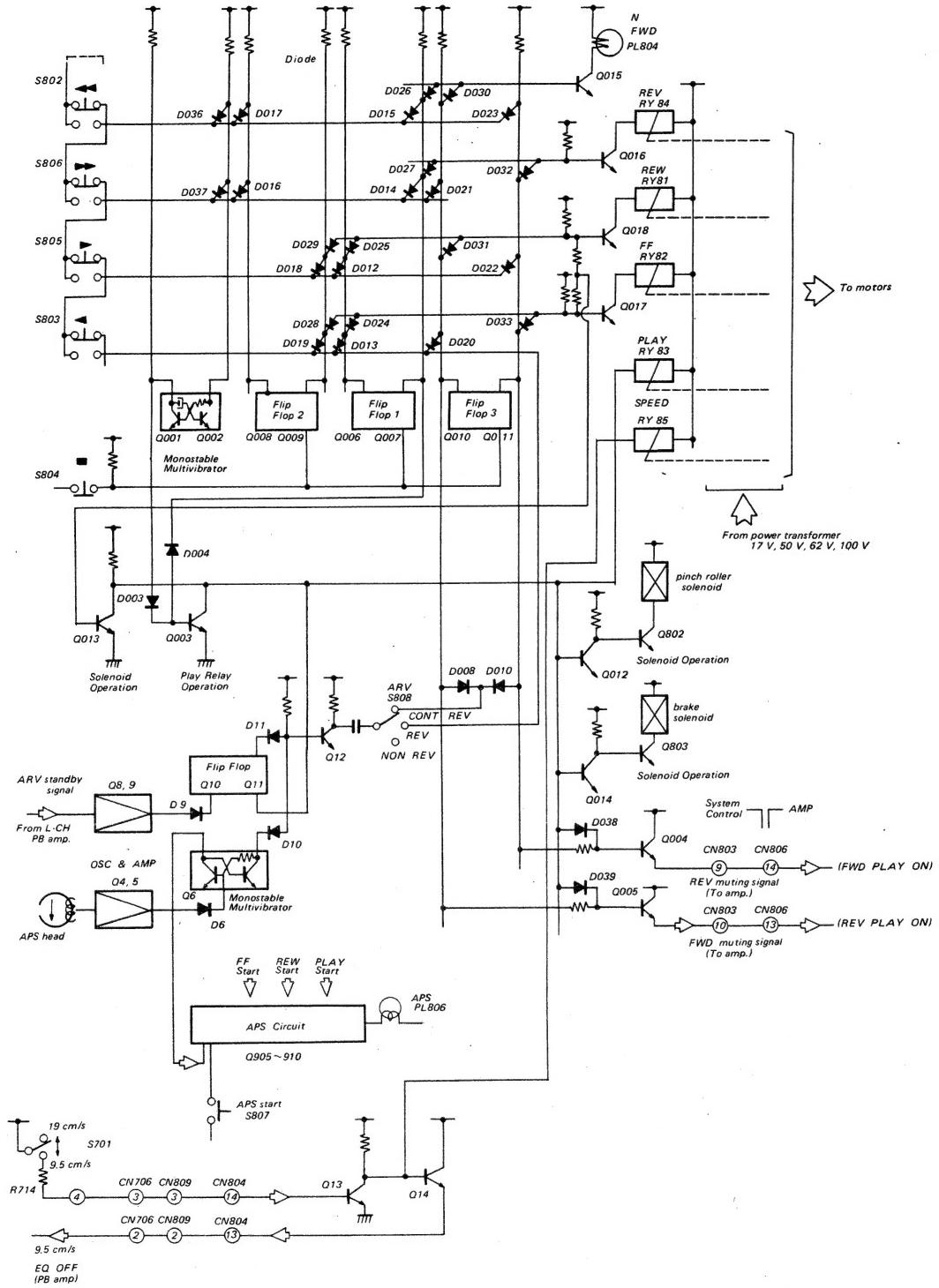
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1. BLOCK DIAGRAMS

1-1. Audio Amp. & Bias OSC Circuit

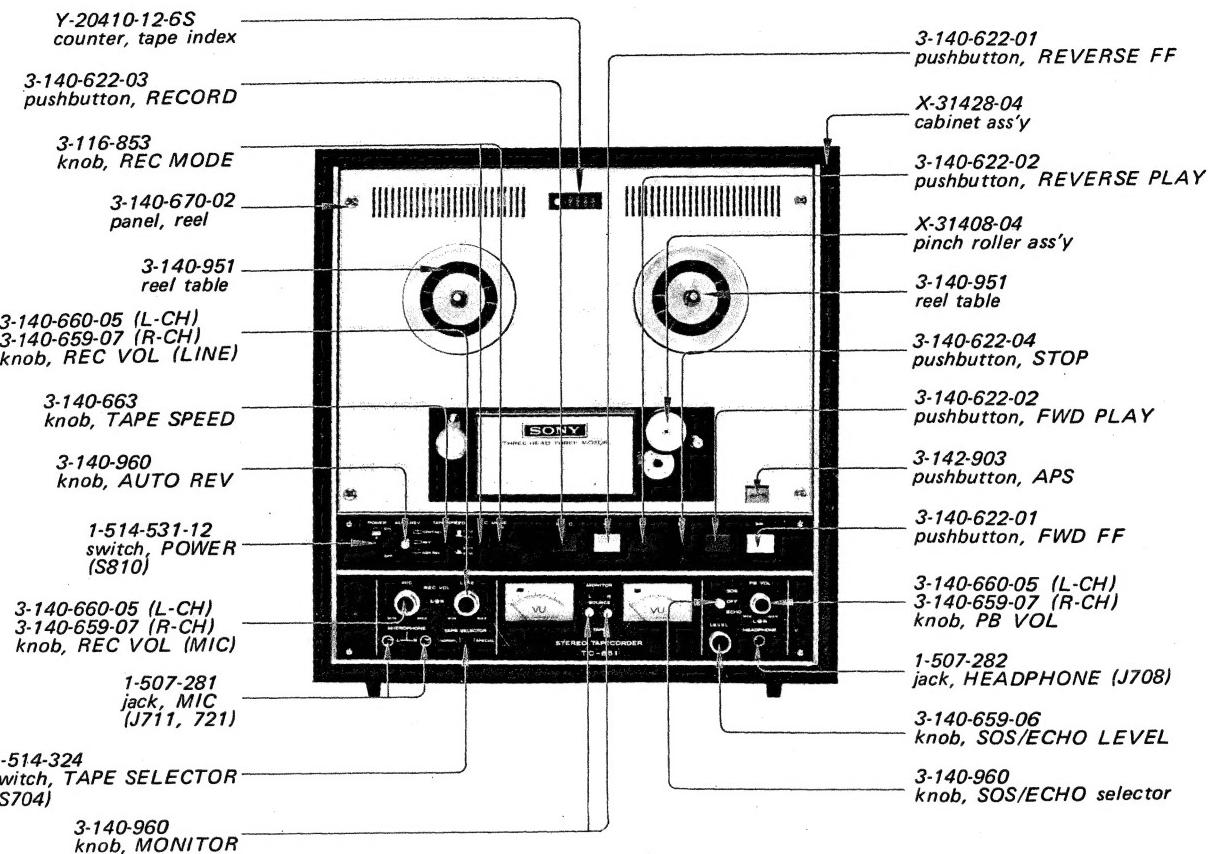


1-2. System Control Circuit

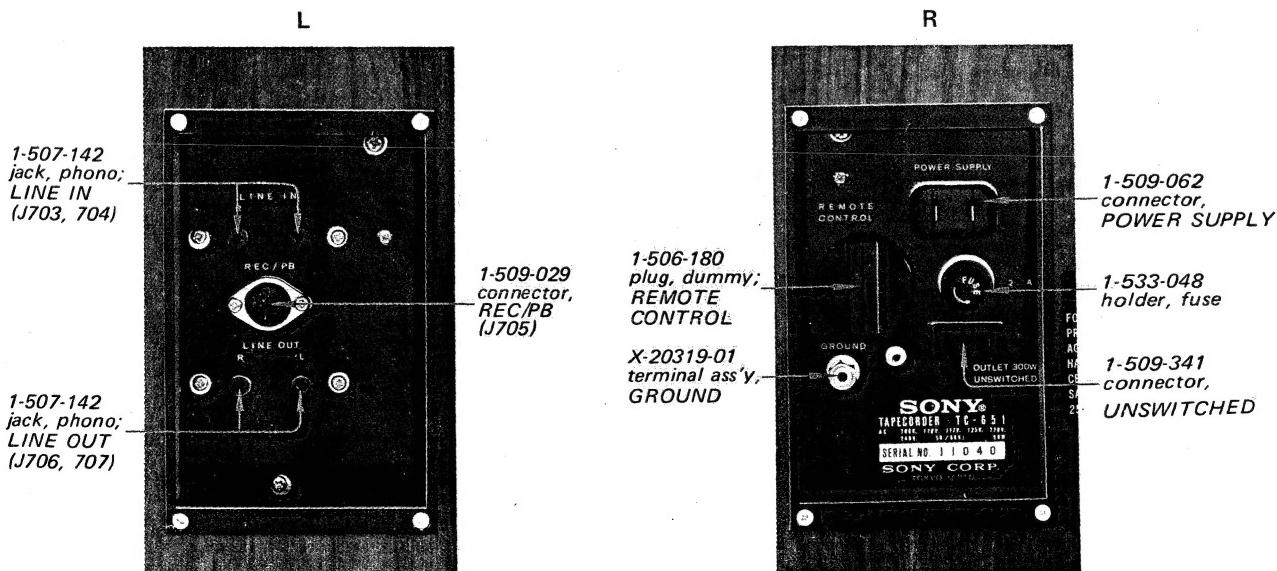


2. MAJOR PARTS LOCATIONS

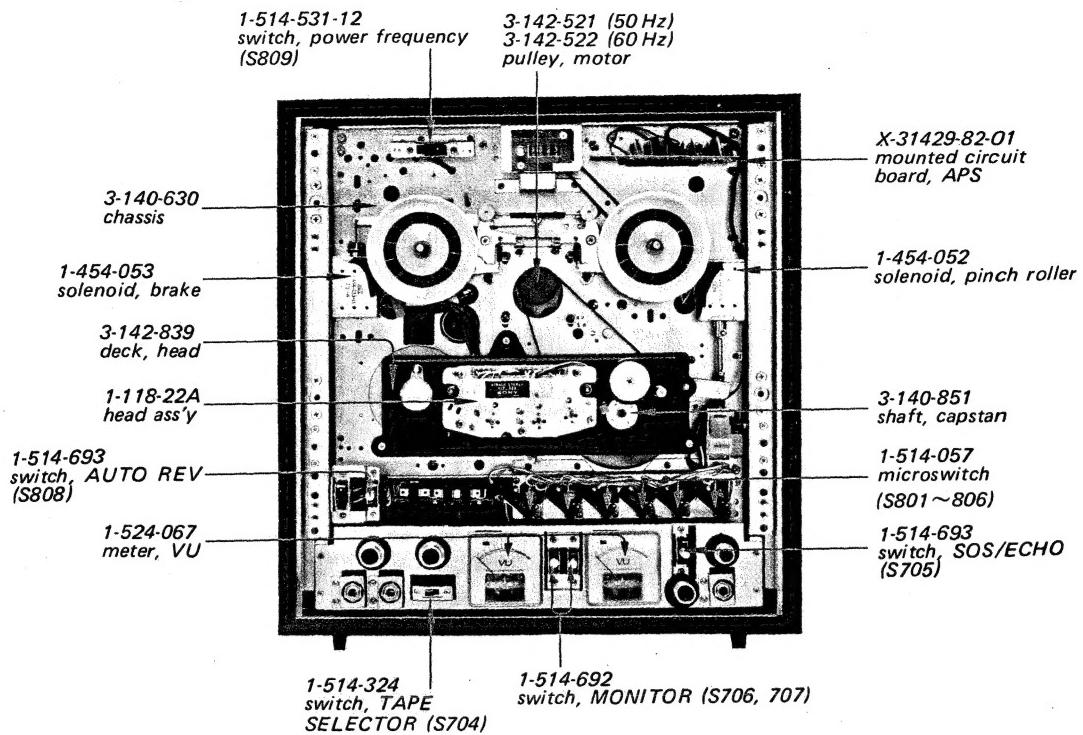
2-1. Cabinet Front View



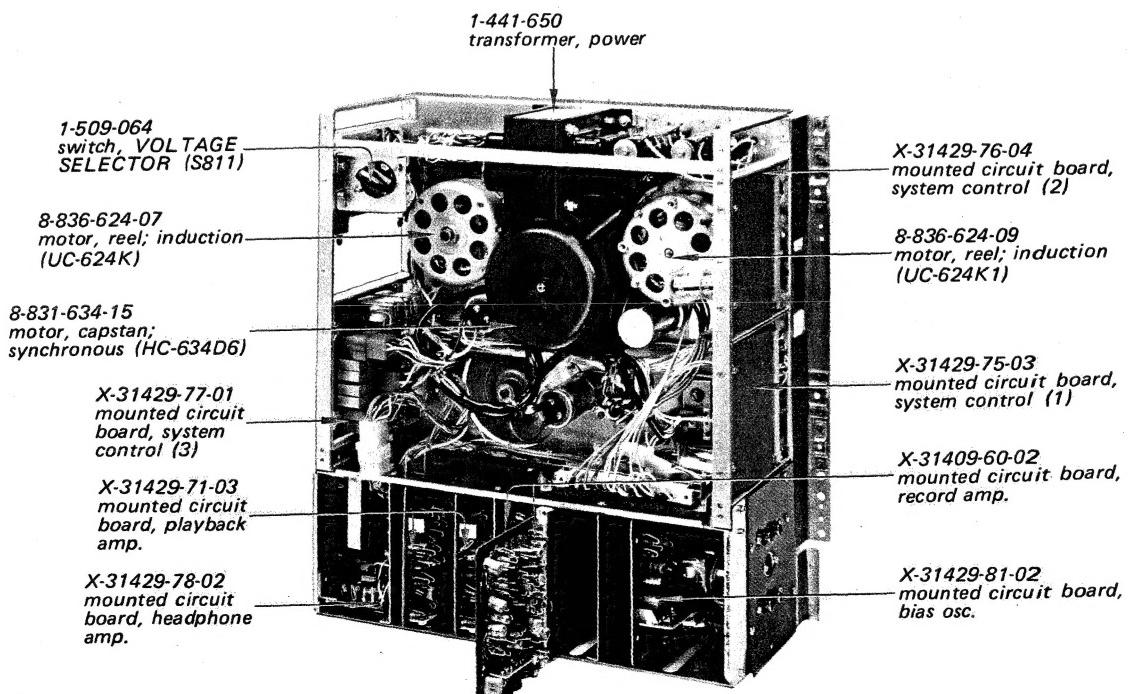
2-2. Cabinet Side Views



2-3. Chassis Top View



2-4. Chassis Bottom View



3. DISASSEMBLY

3-1. Cabinet Removal

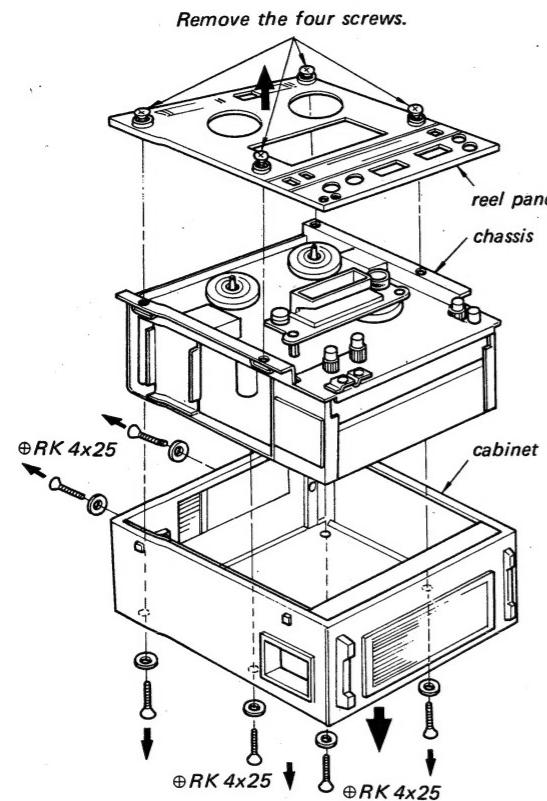


Fig. 3-1. Cabinet removal

3-2. Printed Circuit Board Removal

1. Remove the Cabinet.
2. Pull off the printed circuit boards, PB AMP, REC AMP and BIAS OSC.

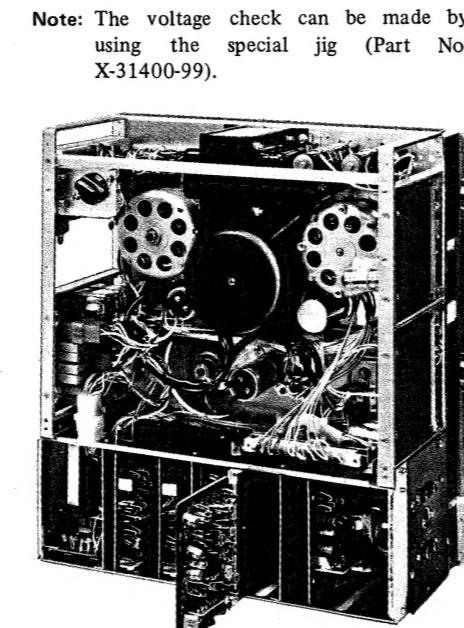
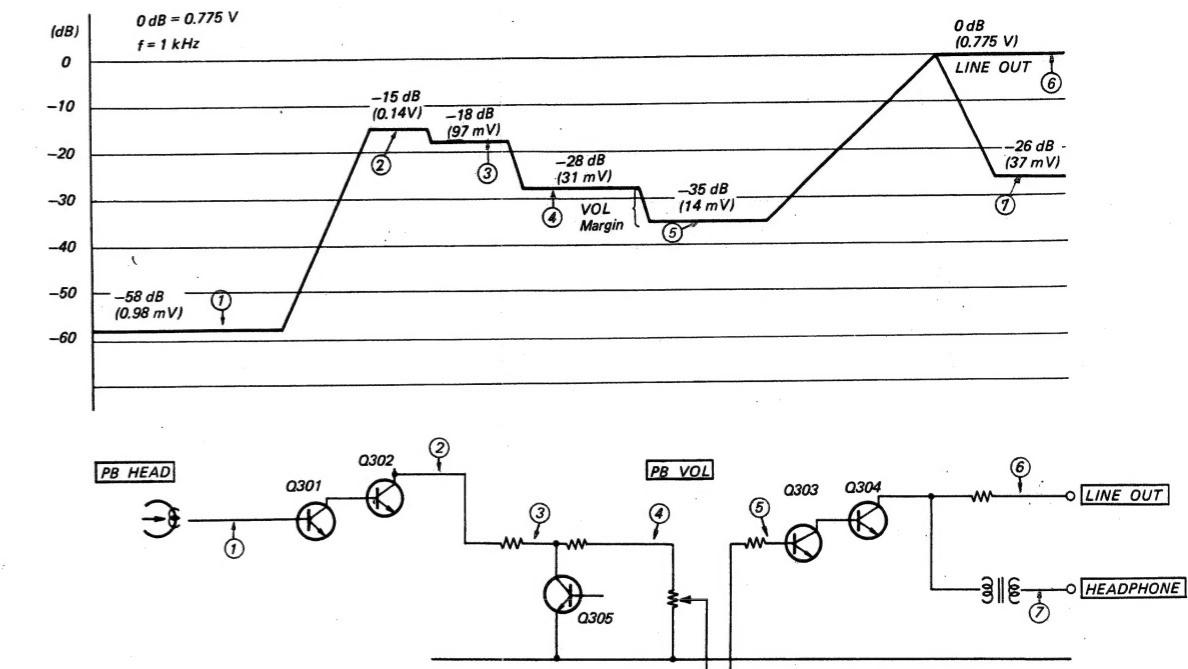


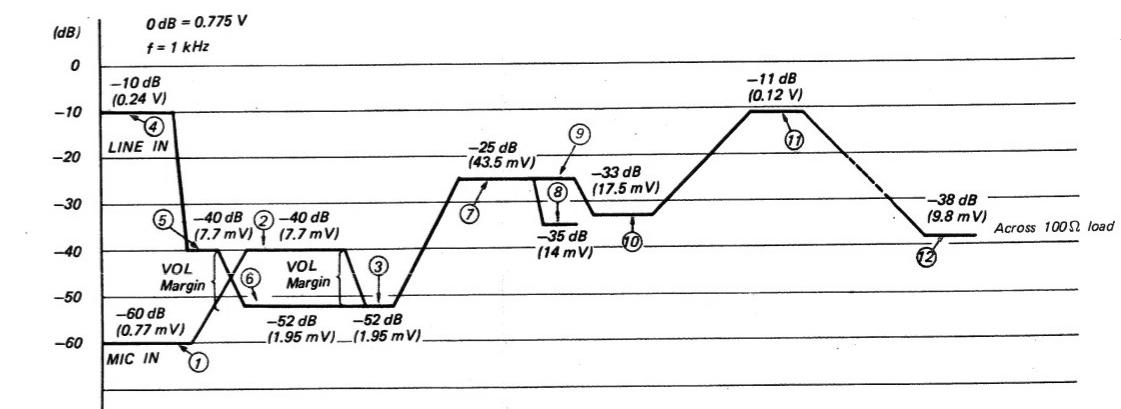
Fig. 3-2. Printed circuit board removal

4. LEVEL DIAGRAMS

4-1. Playback

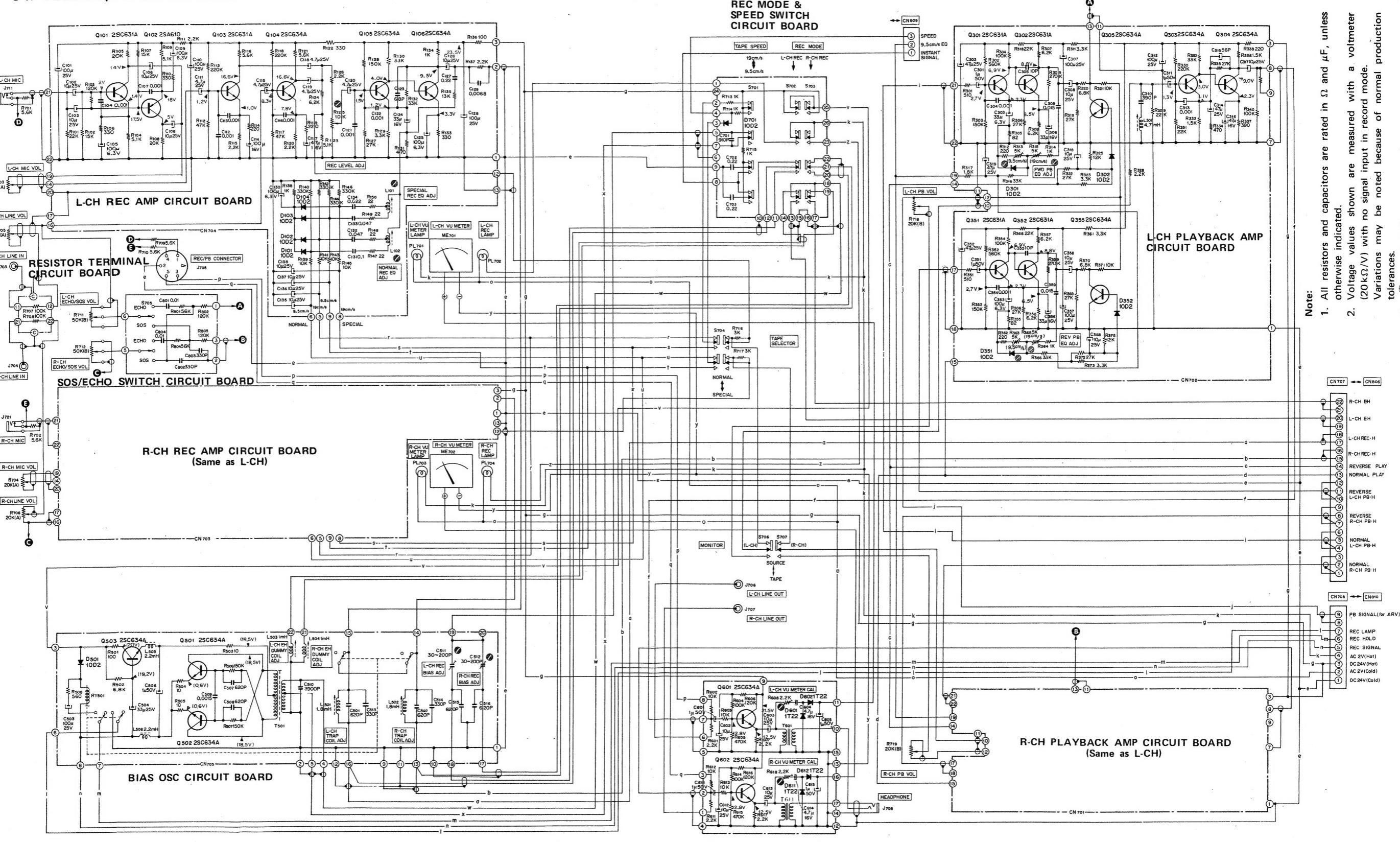


4-2. Record



5. SCHEMATIC DIAGRAMS

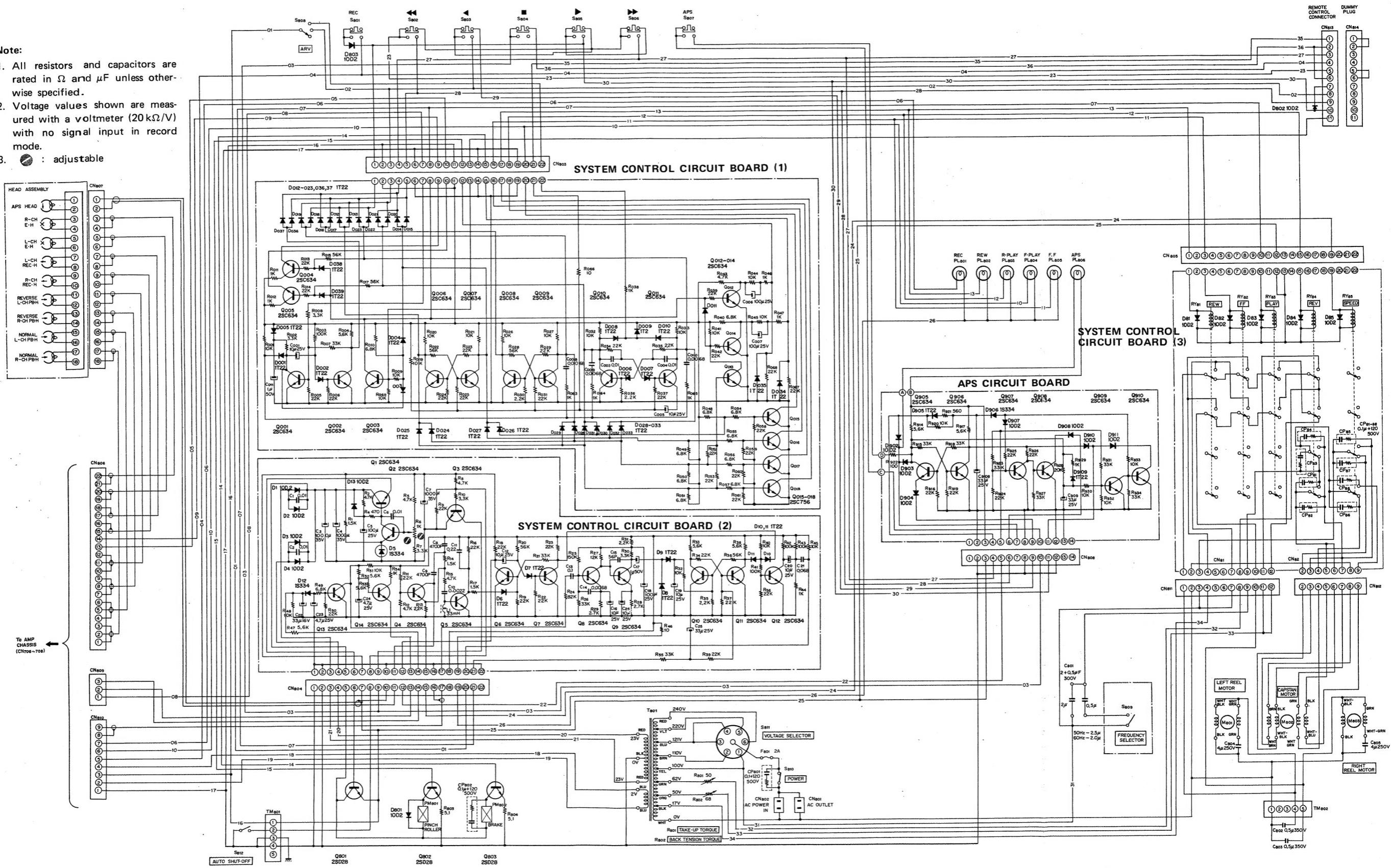
5-1. Audio Amp. & Bias OSC Circuit



5-2. System Control Circuit

Note:

- All resistors and capacitors are rated in Ω and μF unless otherwise specified.
- Voltage values shown are measured with a voltmeter (20 k Ω /V) with no signal input in record mode.
- : adjustable

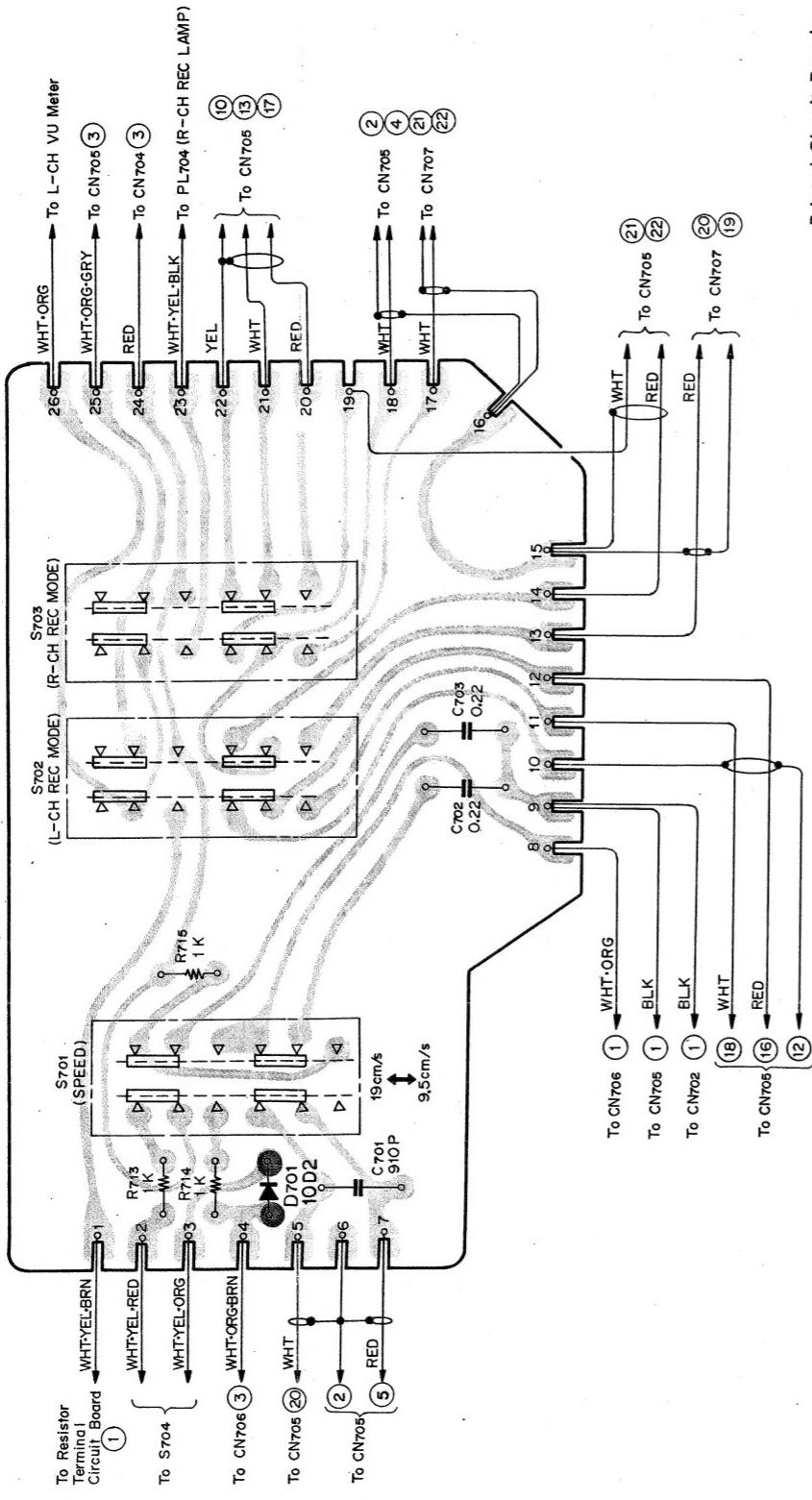


TC-651 TC-651

6. MOUNTING DIAGRAMS

6-1. REC MODE & SPEED Switch Circuit Board

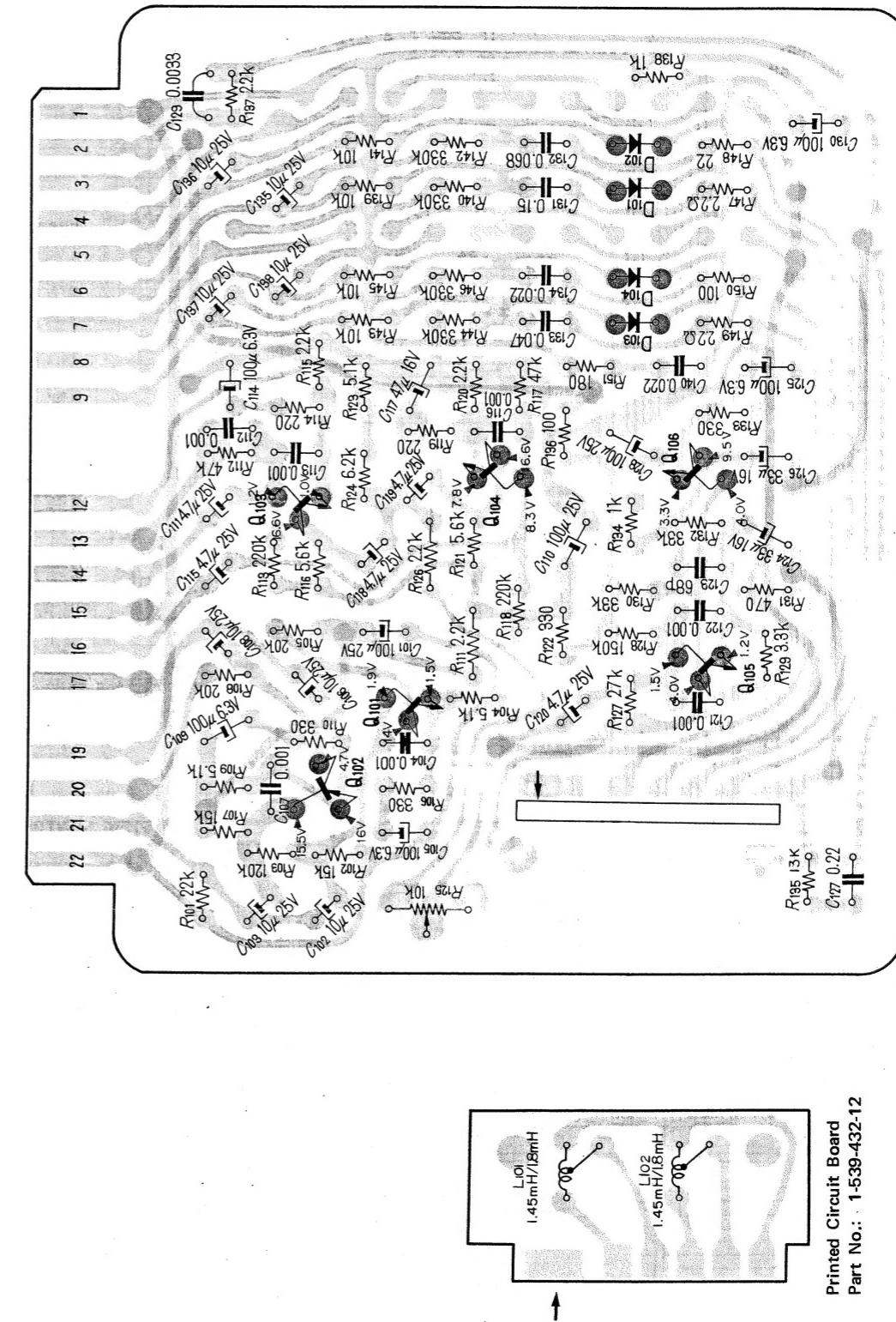
— Conductor Side —



Printed Circuit Board
Part No. 1-539-565-11

6-2. Record Amplifier Circuit Board

— Conductor Side —

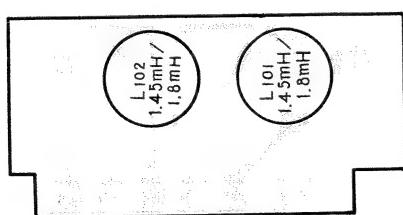
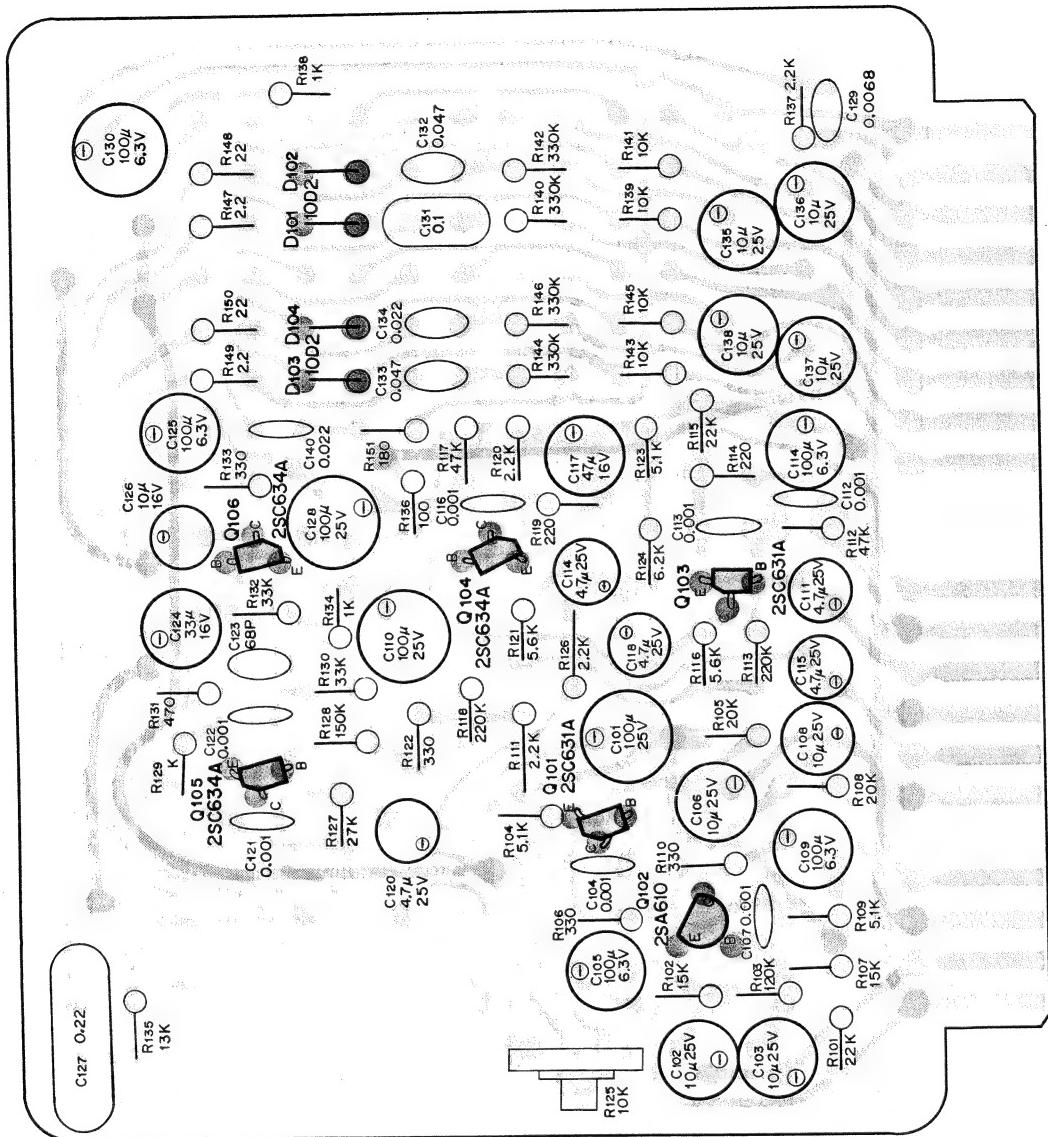


Printed Circuit Board
Part No.: 1-539-432-12

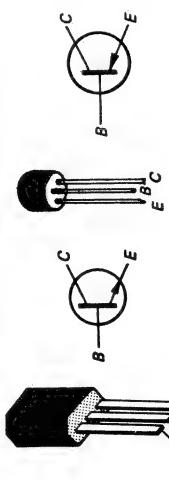
Printed Circuit Board
Part No. 1-539-431-14

6-2. Record Amplifier Circuit Board

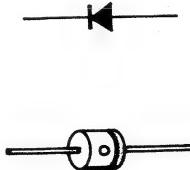
- Component Side -



20SA610



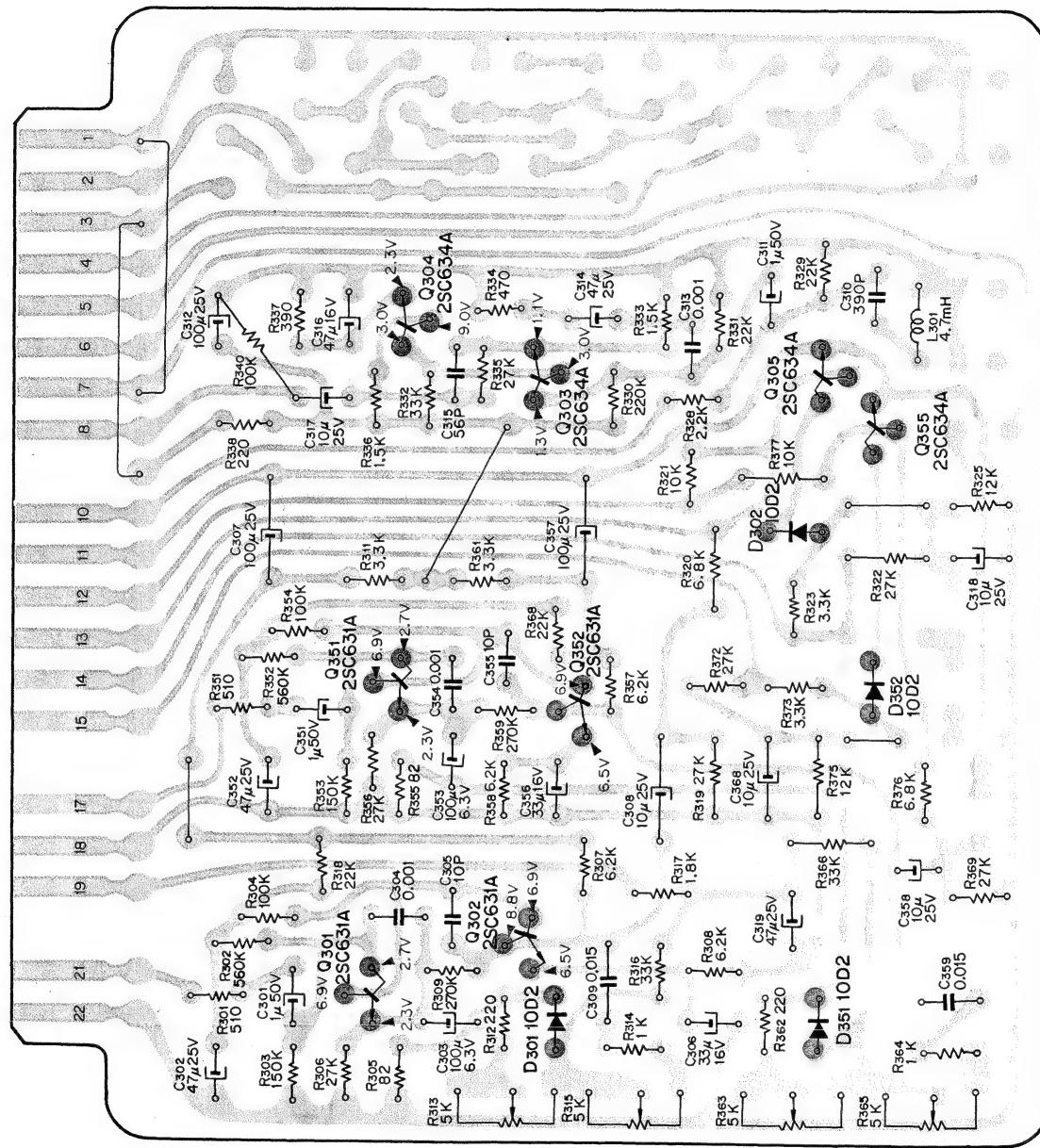
2SC631A, 2SC634A



10D2

6-3. Playback Amplifier Circuit Board

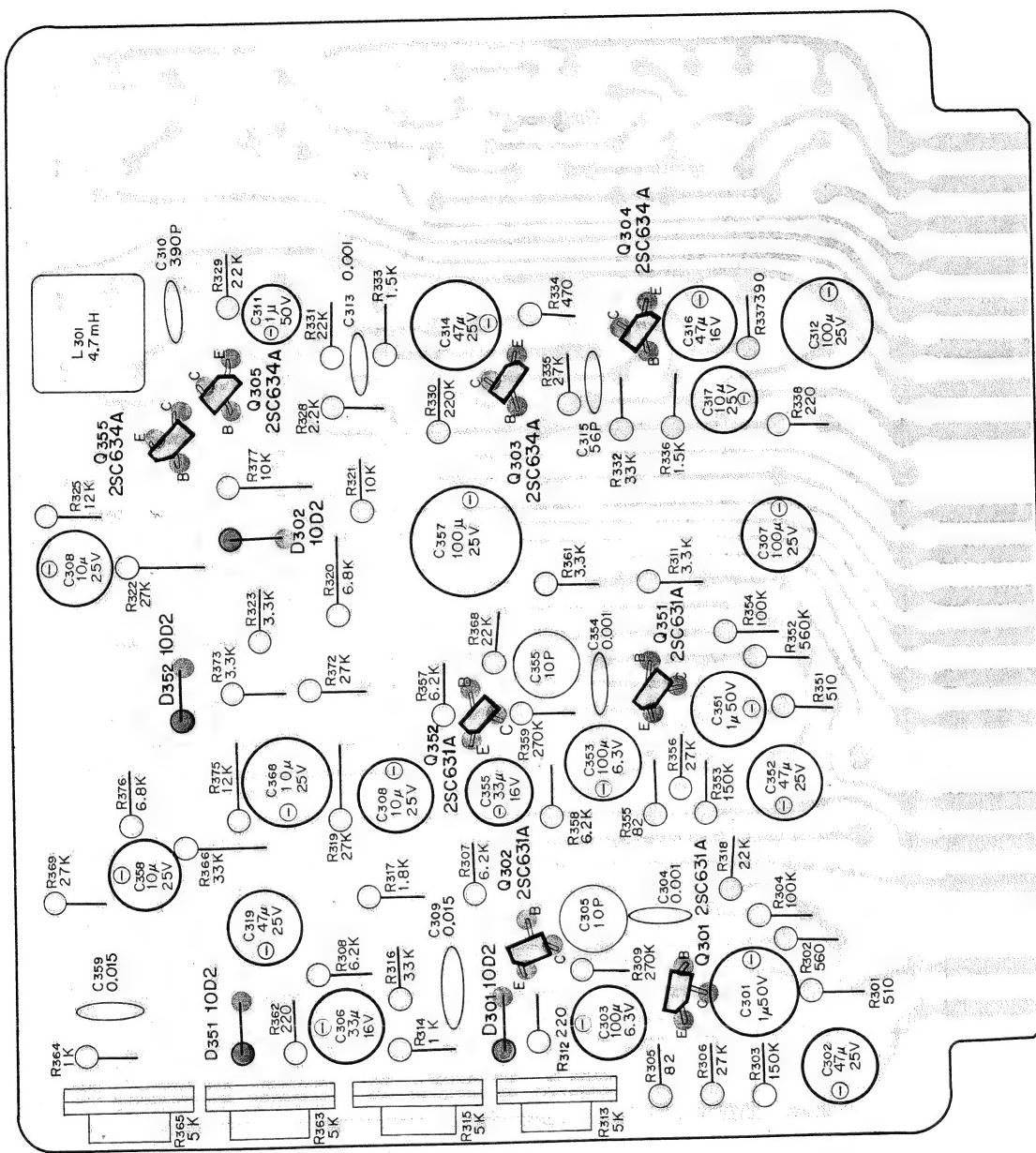
— Conductor Side —



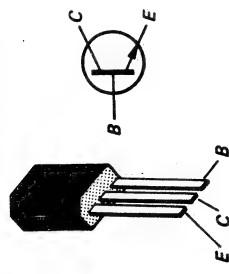
Printed Circuit Board
Part No. 1-539-641-11

6-3. Playback Amplifier Circuit Board

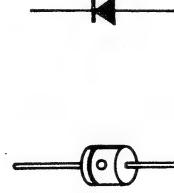
- Component Side -



2SC631A, 2SC634A

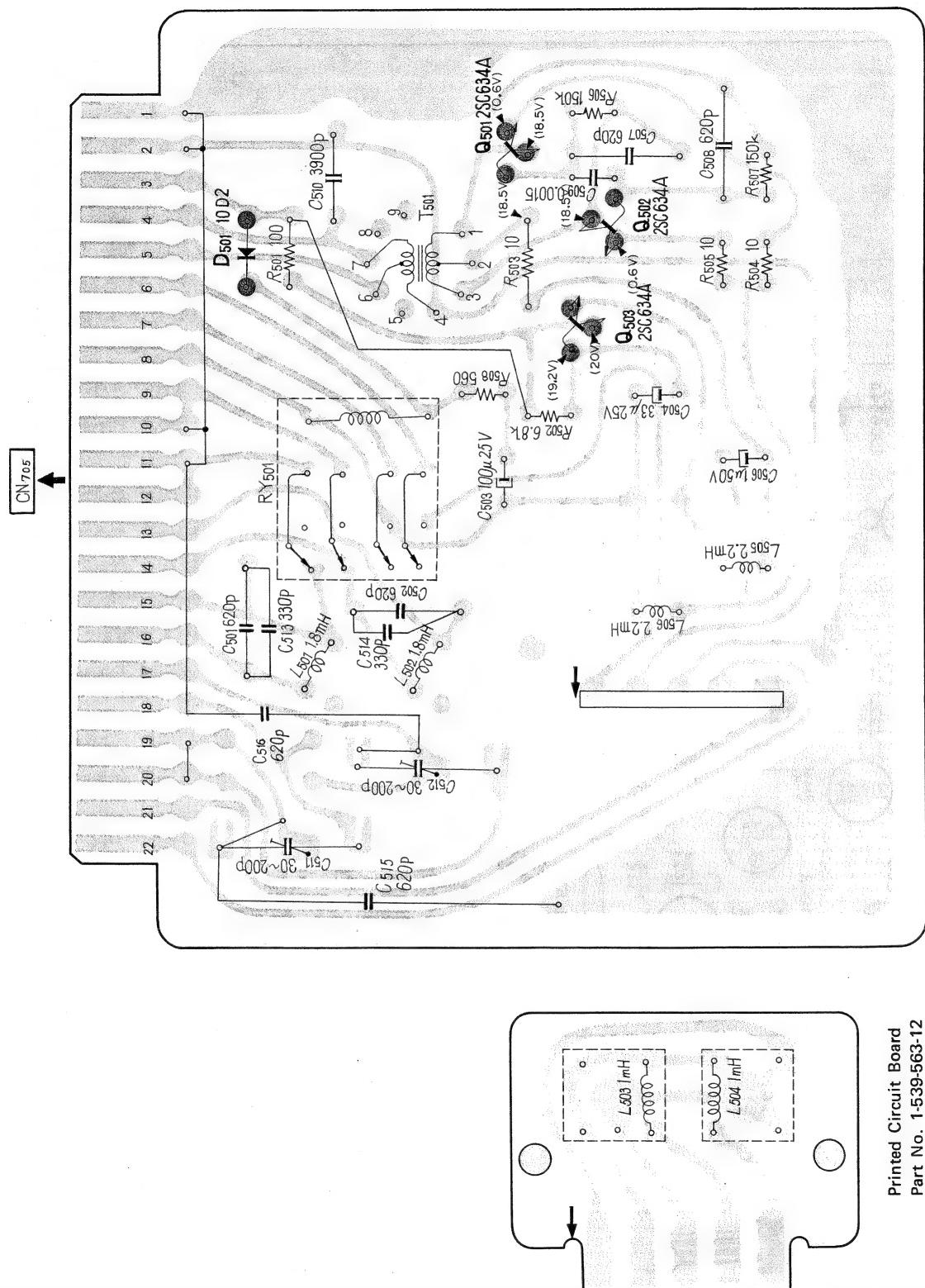


10D2



6-4. BIAS OSC Circuit Board

— Conductor Side —

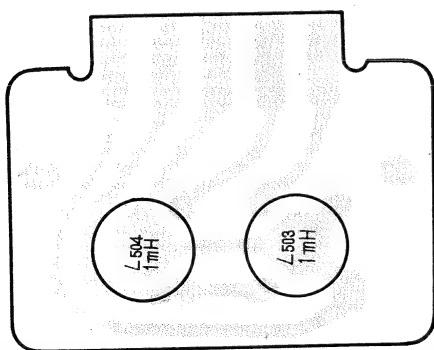
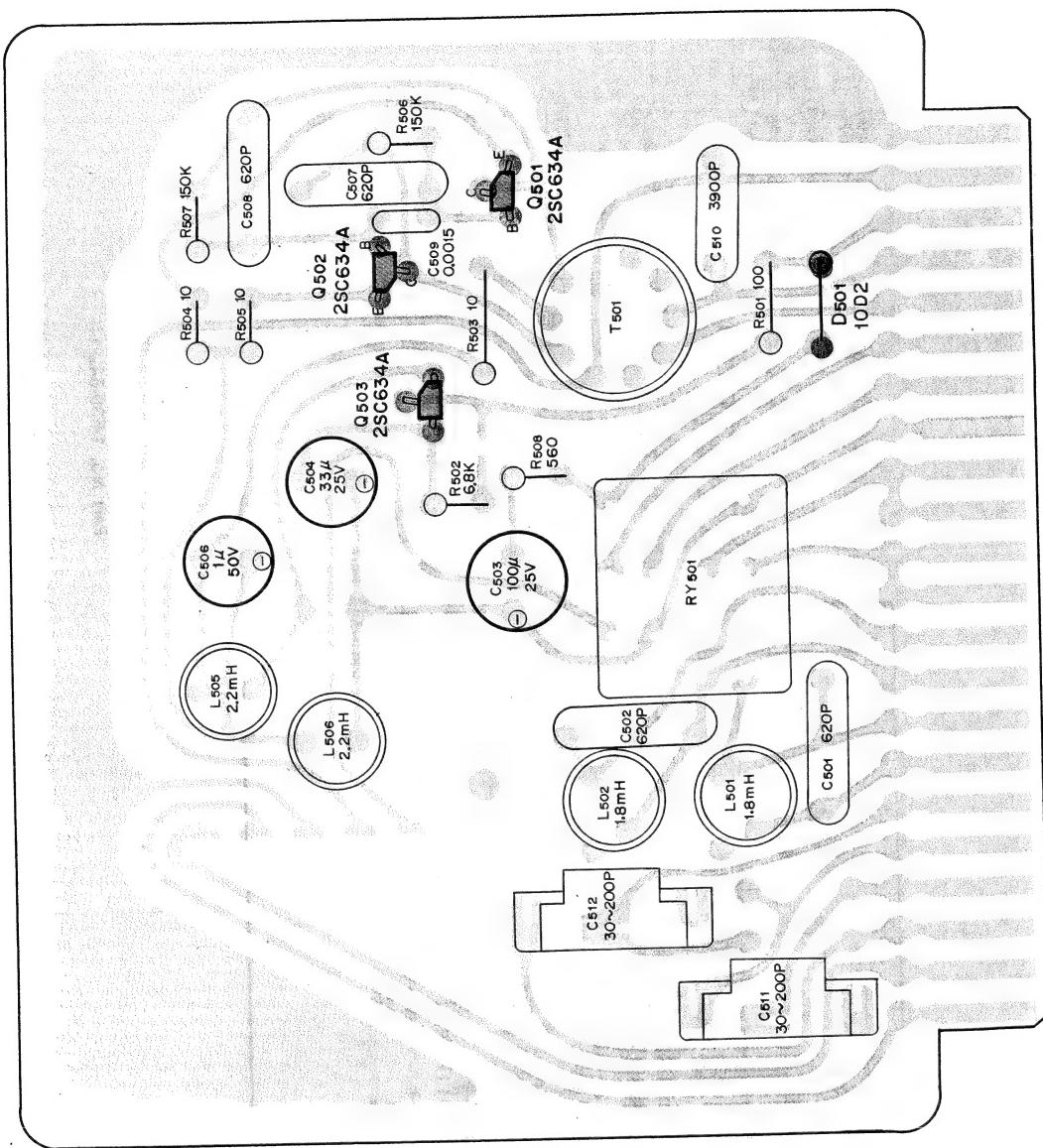


Printed Circuit Board
Part No. 1-539-563-12

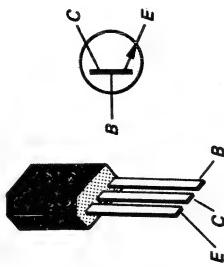
Printed Circuit Board
Part No. 1-539-558-12

6-4. BIAS OSC Circuit Board

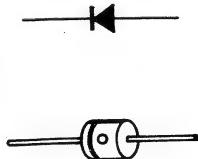
— Component Side —



2SC634A

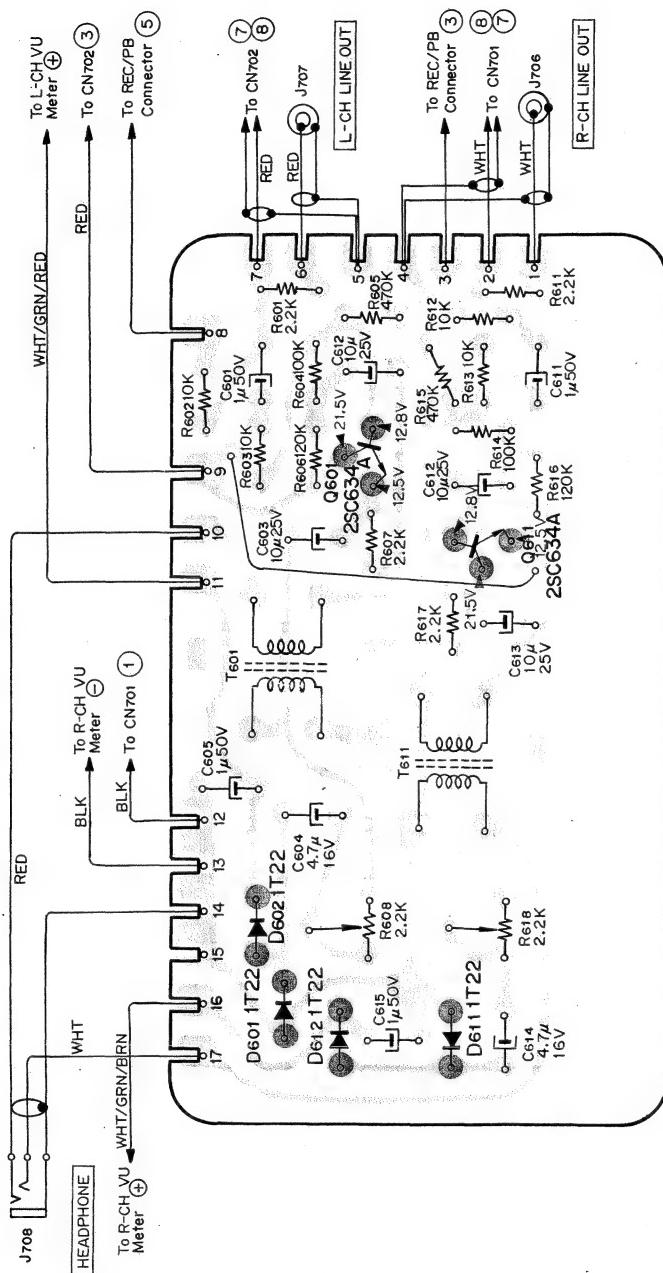


10D2



6-5. Headphone Amplifier Circuit Board

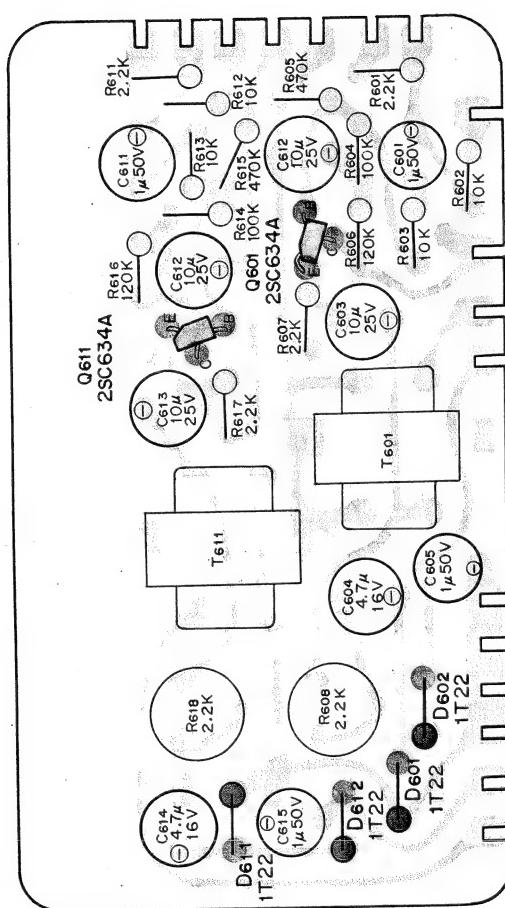
— Conductor Side —



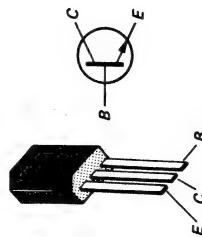
Printed Circuit Board
Part No. 1-539-642-11

6-5. Headphone Amplifier Circuit Board

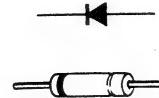
— Component Side —



2SC634A

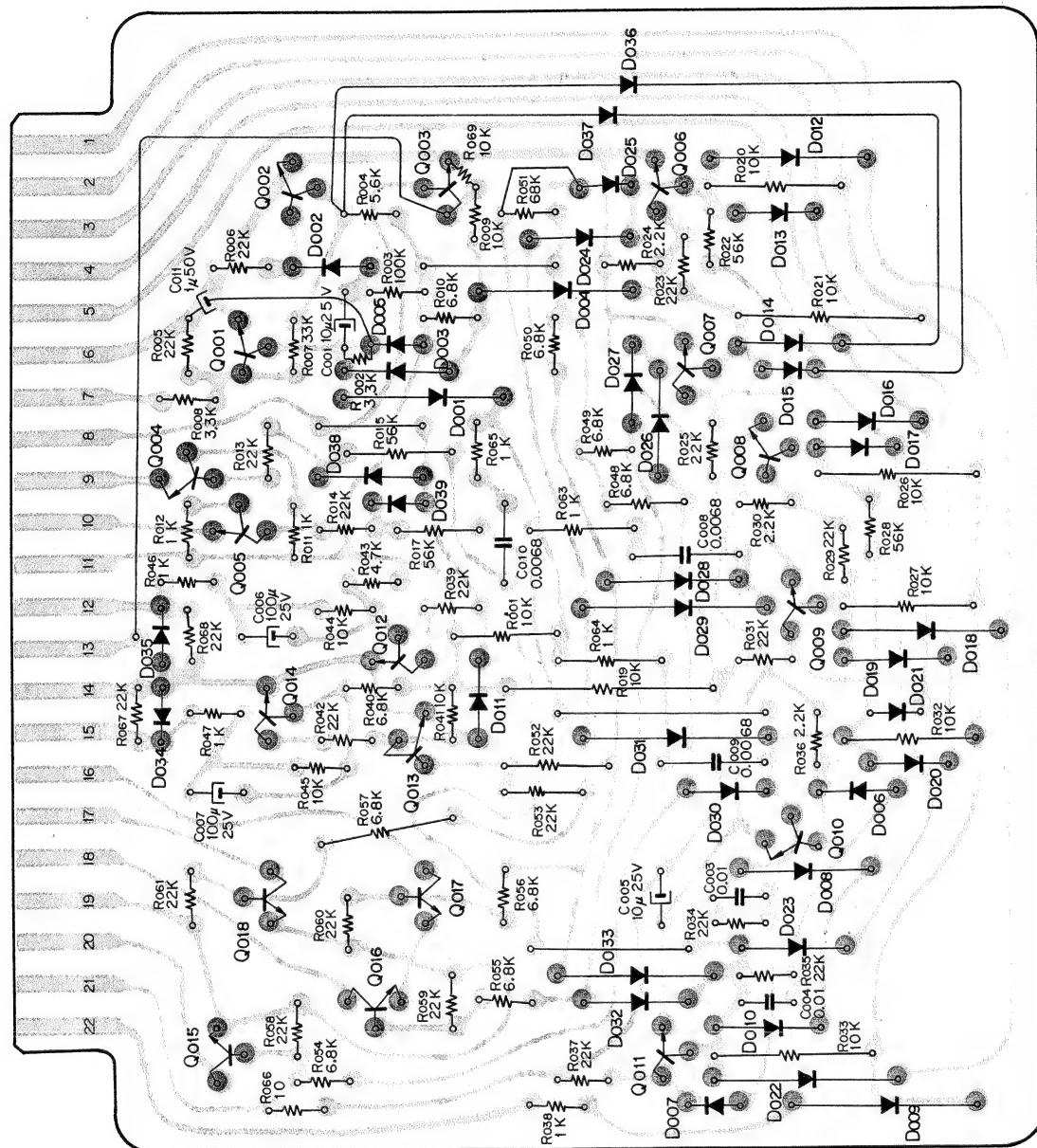


1T22



6-6. System Control Circuit Board (1)

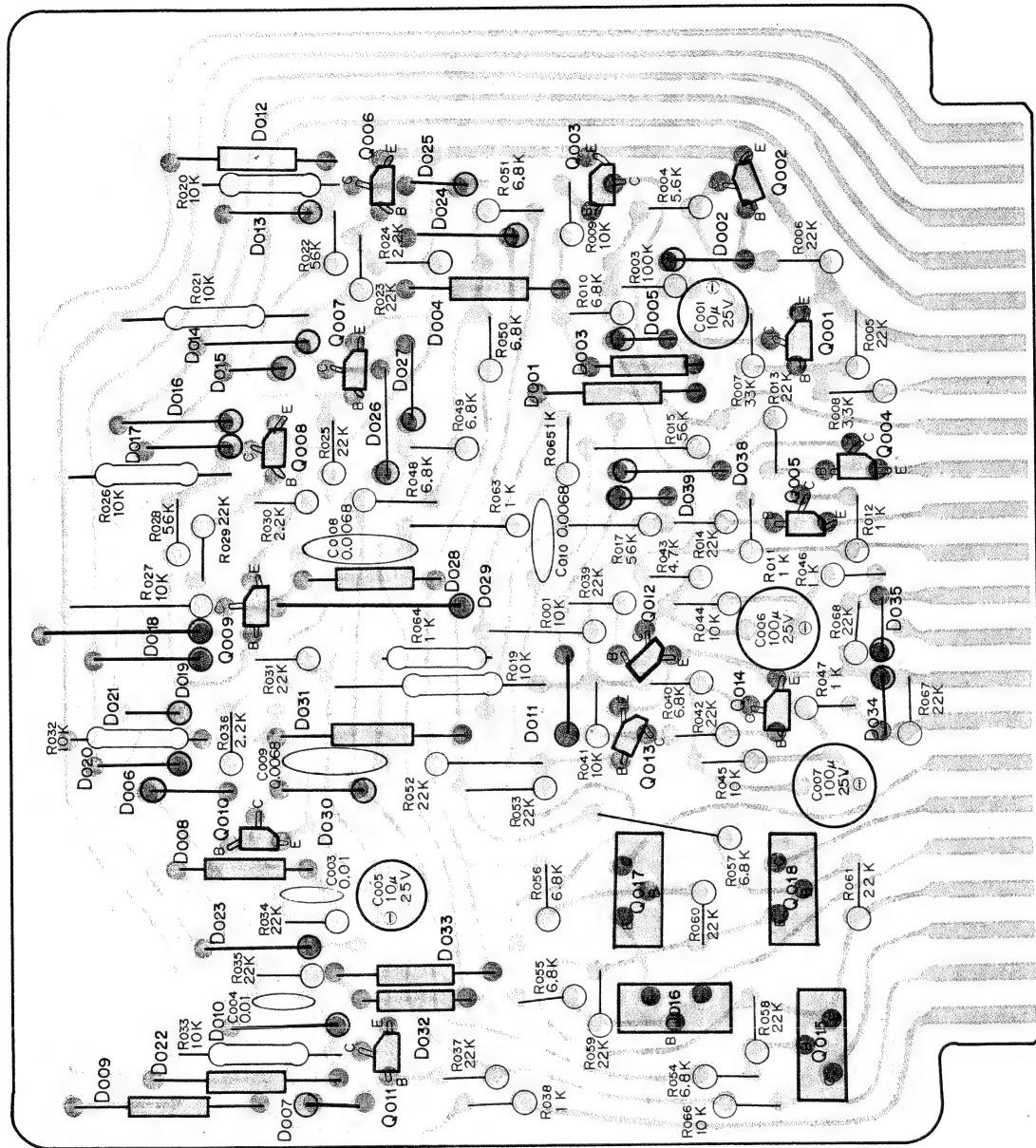
— Conductor Side —



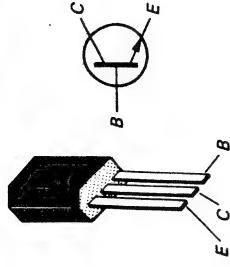
Printed Circuit Board
Part No. 1-539-633-12

6-6. System Control Circuit Board (1)

— Component Side —

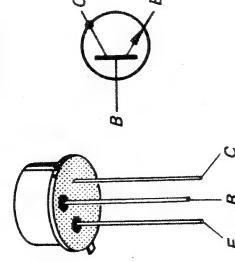


Q001 ~ 014



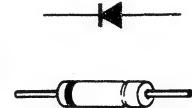
2SC634

Q015 ~ 018



2SC756

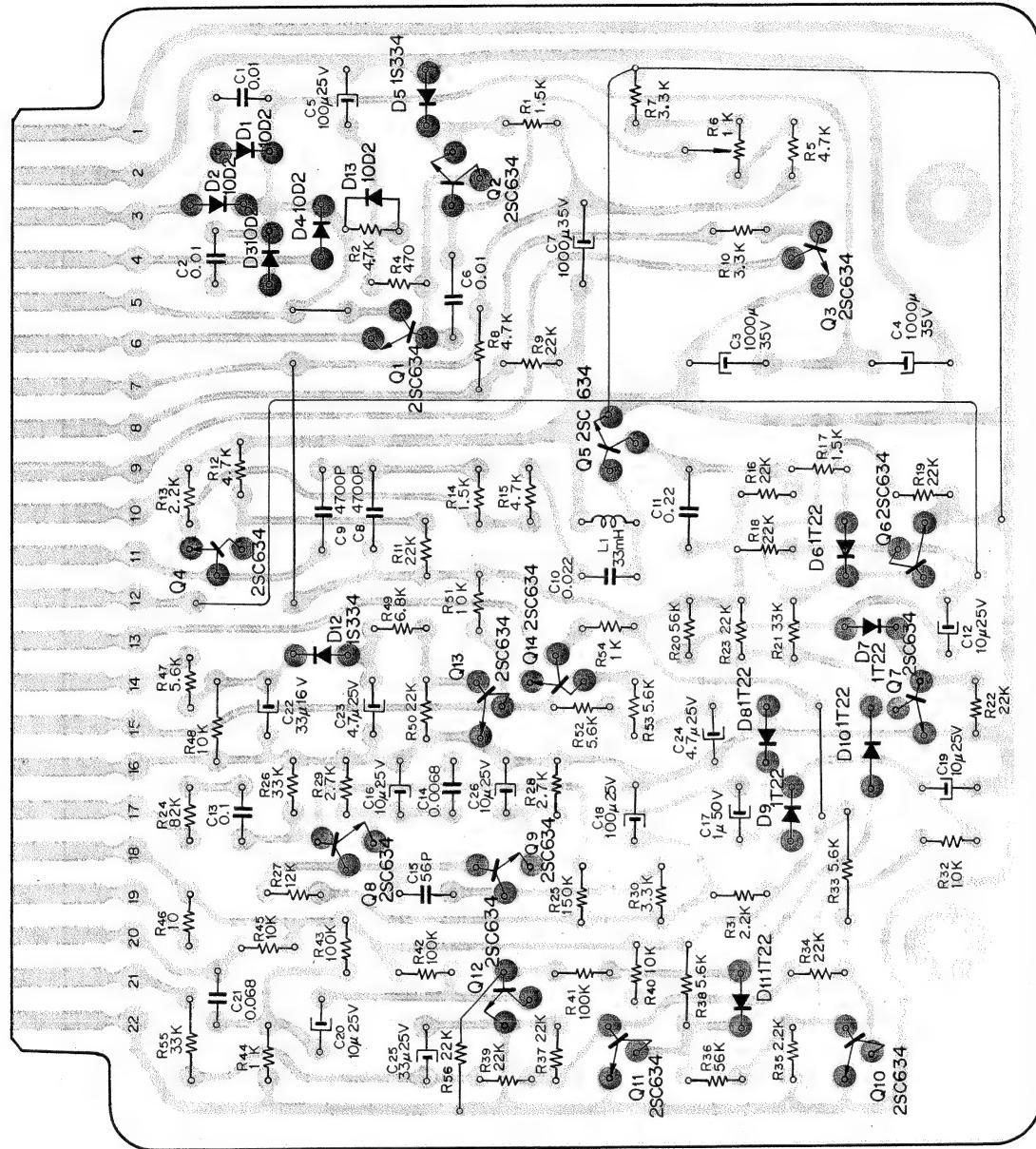
D001 ~ 039



1T22

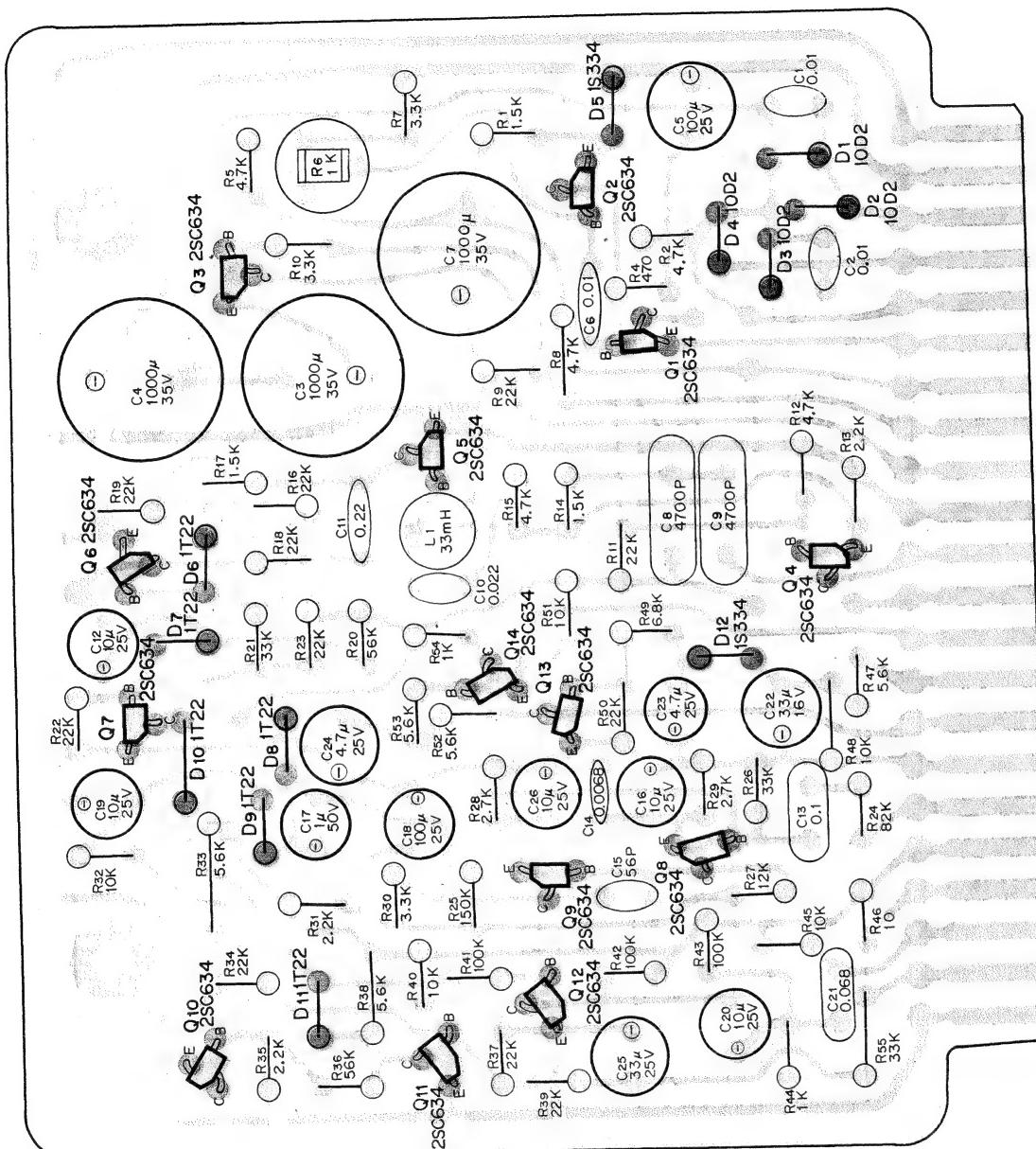
6-7. System Control Circuit Board (2)

— Conductor Side —

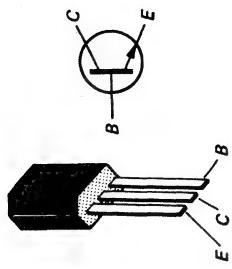


6-7. System Control Circuit Board (2)

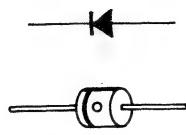
— Component Side —



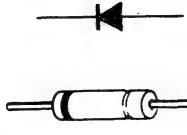
2SC634



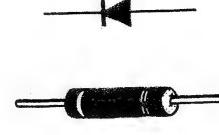
10D2



1T22

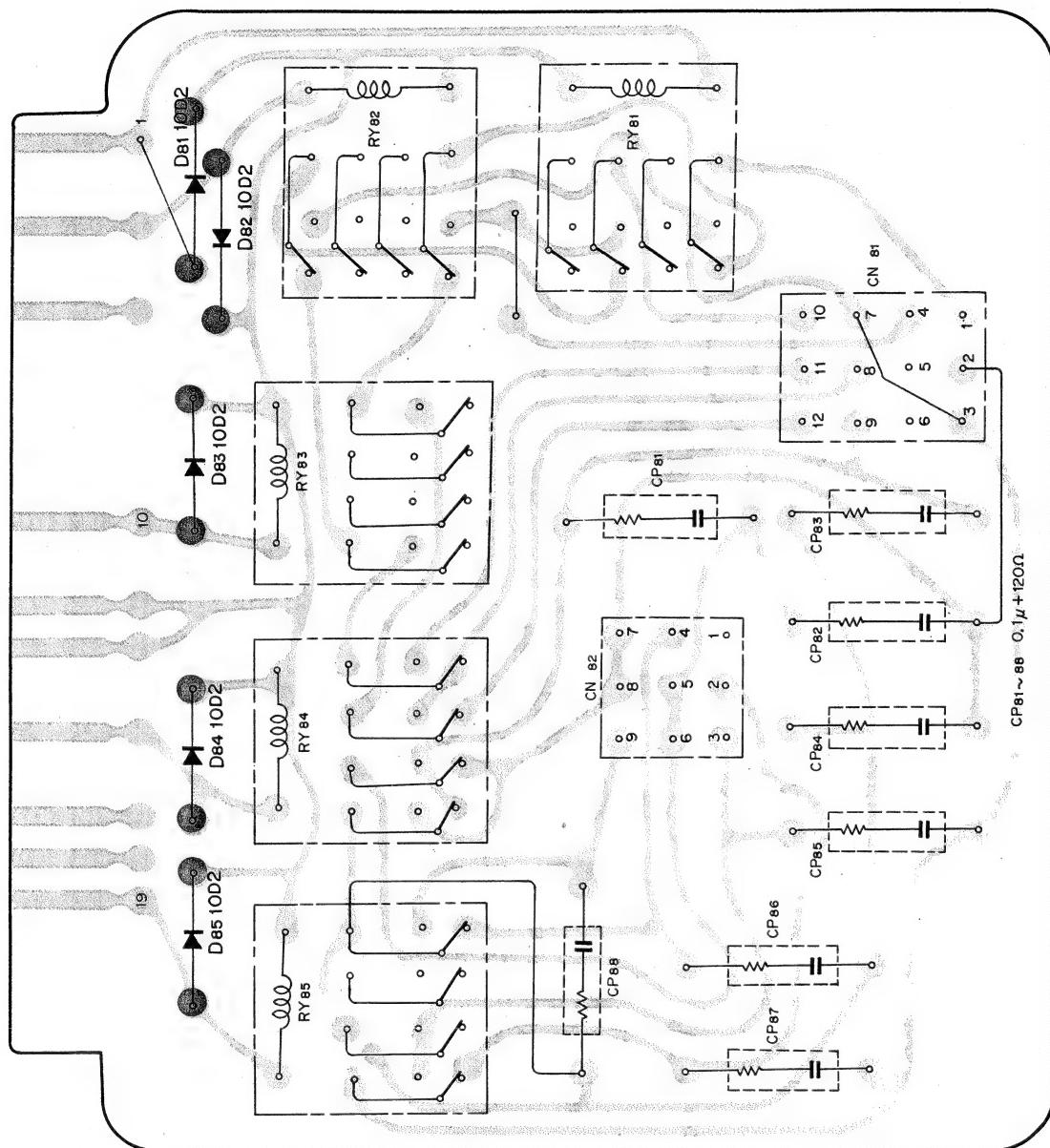


IS334



6-8. System Control Circuit Board (3)

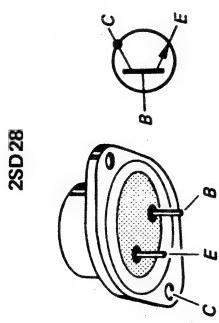
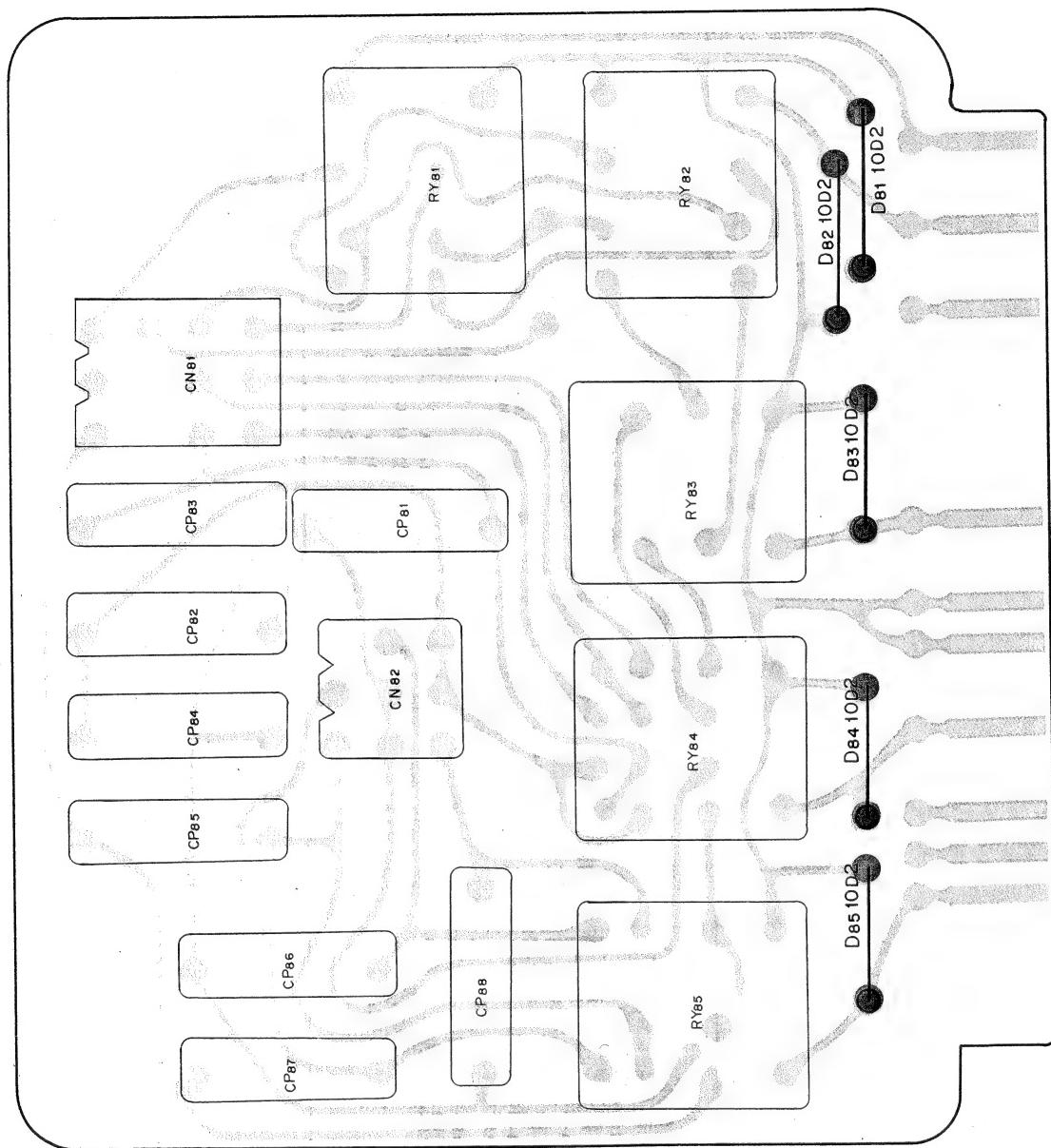
— Conductor Side —



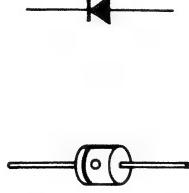
Printed Circuit Board
Part No. 1-539-635-11

6-8. System Control Circuit Board (3)

— Component Side —

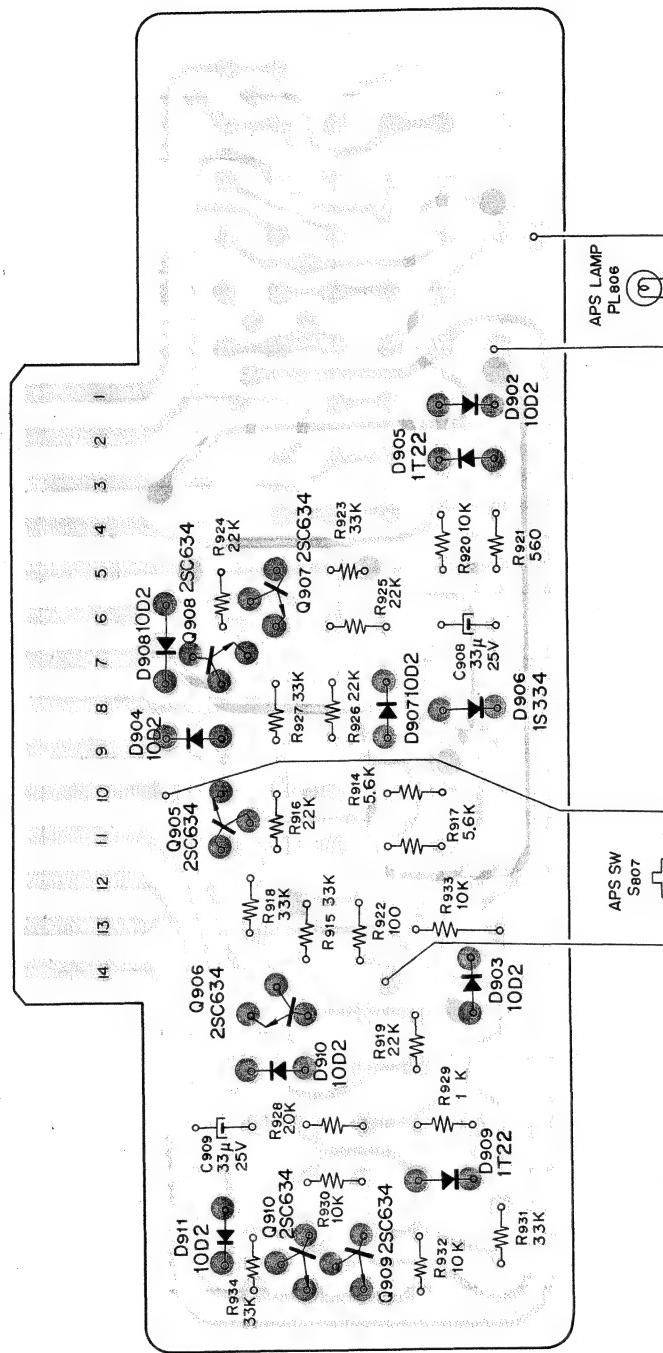


10D2



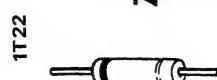
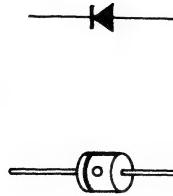
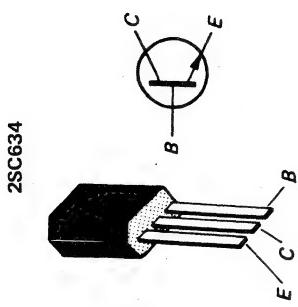
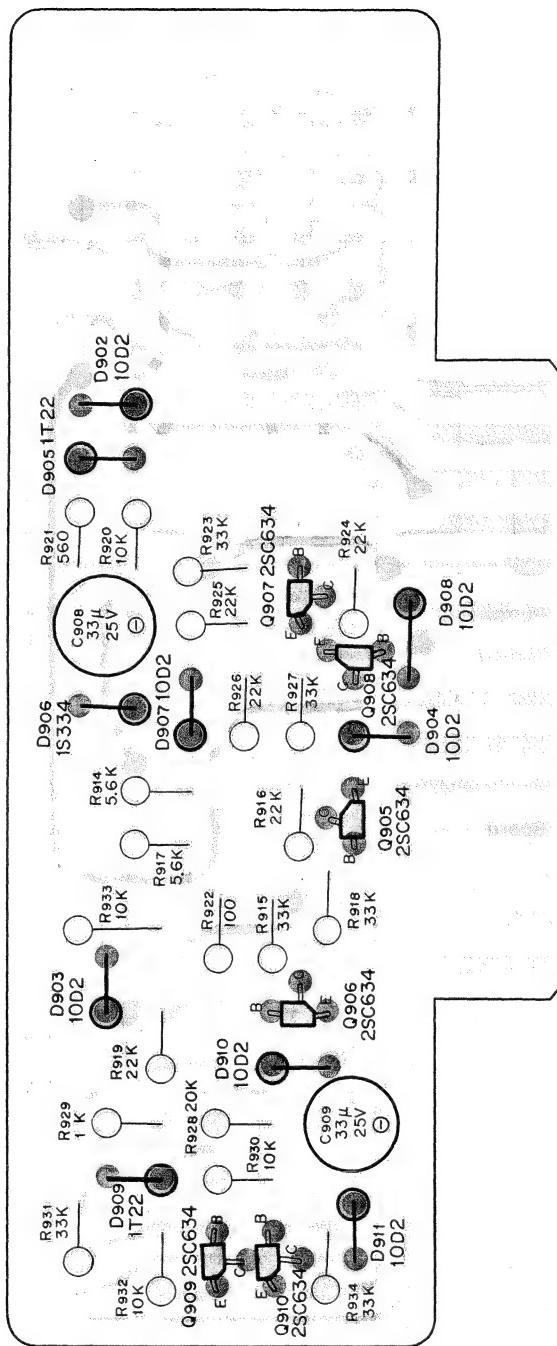
6-9. APS Circuit Board

- Conductor Side -



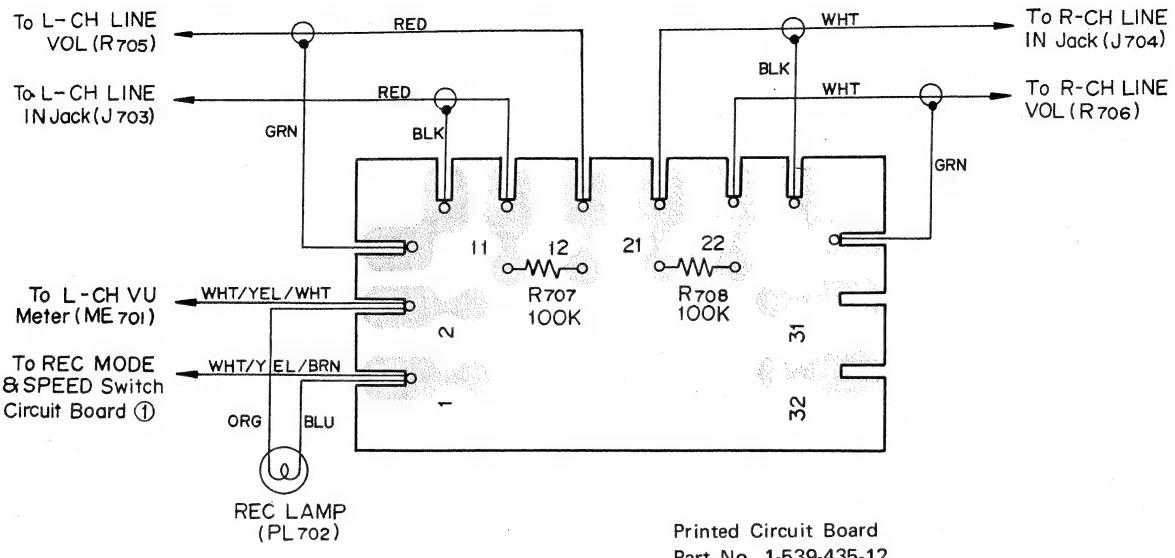
Printed Circuit Board
Part No. 1-539-568-11

6-9. APS Circuit Board

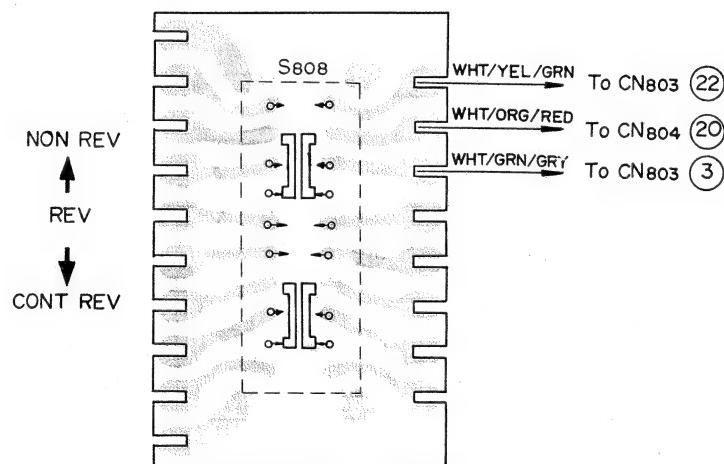


6-10. Resistor Terminal Circuit Board

— Conductor Side —

**6-11. ARV Switch Circuit Board**

— Conductor Side —



7. ELECTRICAL PARTS LIST

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
MOUNTED CIRCUIT BOARDS					
X-31409-60-02	REC amp.		C101, 201	1-121-416	100µF 25V electrolytic
X-31429-71-03	PB amp.		C102, 202	1-121-398	10µF 25V electrolytic
X-31429-81-02	bias osc.		C103, 203	1-121-398	10µF 25V electrolytic
X-31429-78-02	headphone amp.		C104, 204	1-105-661-12	0.001µF 50V mylar
X-31429-82-01	REC mode & speed switch		C105, 205	1-121-413	100µF 6.3V electrolytic
X-31429-57-01	resistor terminal		C106, 206	1-121-398	10µF 25V electrolytic
X-31409-65-01	ECHO & SOS		C107, 207	1-105-661-12	0.001µF 50V mylar
X-31429-75-03	system control (1)		C108, 208	1-121-398	10µF 25V electrolytic
X-31429-76-04	system control (2)		C109, 209	1-121-413	100µF 6.3V electrolytic
X-31429-77-01	system control (3)		C110, 210	1-121-416	100µF 25V electrolytic
X-31429-82-01	APS		C111, 211	1-121-395	4.7µF 25V electrolytic
X-31429-58-01	ARV switch		C112, 212	1-105-661-12	0.001µF 50V mylar
PRINTED CIRCUIT BOARDS					
1-539-431-14	REC amp.		C113, 213	1-105-661-12	0.001µF 50V mylar
1-539-432-12	sub. (REC amp.)		C114, 214	1-121-413	100µF 6.3V electrolytic
1-539-641-11	PB amp.		C115, 215	1-121-395	4.7µF 25V electrolytic
1-539-558-12	bias osc.		C116, 216	1-105-661-12	0.001µF 50V mylar
1-539-563-12	sub. (bias osc.)		C117, 217	1-121-409	47µF 16V electrolytic
1-539-642-11	headphone amp.		C118, 218	1-121-395	4.7µF 25V electrolytic
1-539-565-11	REC mode & speed switch		C119, 219	1-121-395	4.7µF 25V electrolytic
1-539-435-12	resistor terminal		C120, 220	1-121-395	4.7µF 25V electrolytic
1-539-560-11	ECHO & SOS		C121, 221	1-105-661-12	0.001µF 50V mylar
1-539-633-12	system control (1)		C122, 222	1-105-661-12	0.001µF 50V mylar
1-539-634-12	system control (2)		C123, 223	1-107-127	68pF 50V silvered mica
1-539-635-11	system control (3)		C124, 224	1-121-403	33µF 16V electrolytic
1-539-568-11	APS		C125, 225	1-121-413	100µF 6.3V electrolytic
1-539-443-11	ARV switch		C126, 226	1-121-398	10µF 25V electrolytic
1-539-436-11	head connector		C127, 227	1-105-689-12	0.22µF 50V mylar
1-539-437-11	docking		C128, 228	1-121-416	100µF 25V electrolytic
1-539-663-11	pilot lamp holding		C129, 229	1-105-671-12	0.0068µF 50V mylar
RECORD AMP CIRCUIT					
SEMICONDUCTORS					
Q101, 201	transistor	2SC631A	R101, 201	1-242-705	22kΩ
Q102, 202	transistor	2SA610	R102, 202	1-242-701	15kΩ
Q103, 203	transistor	2SC631A	R103, 203	1-242-723	120kΩ
Q104, 204	transistor	2SC634A	R104, 204	1-242-690	5.1kΩ
Q105, 205	transistor	2SC634A	R105, 205	1-242-704	20kΩ
Q106, 206	transistor	2SC634A	R106, 206	1-242-661	330Ω
D101, 201	diode	10D-2	R107, 207	1-242-701	15kΩ
D102, 202	diode	10D-2	R108, 208	1-242-704	20kΩ
D103, 203	diode	10D-2	R109, 209	1-242-690	5.1kΩ
D104, 204	diode	10D-2	R110, 210	1-242-661	330Ω
COILS					
L101, 201	1-231-069	equalizer	1.45/1.8 mH		
L102, 202	1-231-069	equalizer	1.45/1.8 mH		
CAPACITORS					
C101, 201	1-121-416	100µF	25V	electrolytic	
C102, 202	1-121-398	10µF	25V	electrolytic	
C103, 203	1-121-398	10µF	25V	electrolytic	
C104, 204	1-105-661-12	0.001µF	50V	mylar	
C105, 205	1-121-413	100µF	6.3V	electrolytic	
C106, 206	1-121-398	10µF	25V	electrolytic	
C107, 207	1-105-661-12	0.001µF	50V	mylar	
C108, 208	1-121-398	10µF	25V	electrolytic	
C109, 209	1-121-413	100µF	6.3V	electrolytic	
C110, 210	1-121-416	100µF	25V	electrolytic	
C111, 211	1-121-395	4.7µF	25V	electrolytic	
C112, 212	1-105-661-12	0.001µF	50V	mylar	
C113, 213	1-105-661-12	0.001µF	50V	mylar	
C114, 214	1-121-413	100µF	6.3V	electrolytic	
C115, 215	1-121-395	4.7µF	25V	electrolytic	
C116, 216	1-105-661-12	0.001µF	50V	mylar	
C117, 217	1-121-409	47µF	16V	electrolytic	
C118, 218	1-121-395	4.7µF	25V	electrolytic	
C119, 219	1-121-395	4.7µF	25V	electrolytic	
C120, 220	1-121-395	4.7µF	25V	electrolytic	
C121, 221	1-105-661-12	0.001µF	50V	mylar	
C122, 222	1-105-661-12	0.001µF	50V	mylar	
C123, 223	1-107-127	68pF	50V	silvered mica	
C124, 224	1-121-403	33µF	16V	electrolytic	
C125, 225	1-121-413	100µF	6.3V	electrolytic	
C126, 226	1-121-398	10µF	25V	electrolytic	
C127, 227	1-105-689-12	0.22µF	50V	mylar	
C128, 228	1-121-416	100µF	25V	electrolytic	
C129, 229	1-105-671-12	0.0068µF	50V	mylar	
C130, 230	1-121-413	100µF	6.3V	electrolytic	
C131, 231	1-105-685-12	0.1µF	50V	mylar	
C132, 232	1-105-681-12	0.047µF	50V	mylar	
C133, 233	1-105-681-12	0.047µF	50V	mylar	
C134, 234	1-105-677-12	0.022µF	50V	mylar	
C135, 235	1-121-398	10µF	25V	electrolytic	
C136, 236	1-121-398	10µF	25V	electrolytic	
C137, 237	1-121-398	10µF	25V	electrolytic	
C138, 238	1-121-398	10µF	25V	electrolytic	
RESISTORS					
All resistors are 1/4W, carbon type, unless otherwise specified.					
R101, 201	1-242-705	22kΩ			
R102, 202	1-242-701	15kΩ			
R103, 203	1-242-723	120kΩ			
R104, 204	1-242-690	5.1kΩ			
R105, 205	1-242-704	20kΩ			
R106, 206	1-242-661	330Ω			
R107, 207	1-242-701	15kΩ			
R108, 208	1-242-704	20kΩ			
R109, 209	1-242-690	5.1kΩ			
R110, 210	1-242-661	330Ω			

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
R111, 211	1-242-681	2.2kΩ	D301, 351)		
R112, 212	1-242-713	47kΩ	D401, 451)		diode 10D-2
R113, 213	1-242-729	220kΩ	D302, 352)		
R114, 214	1-242-657	220Ω	D402, 452)		diode 10D-2
R115, 215	1-242-681	2.2kΩ			
R116, 216	1-242-691	5.6kΩ			COIL
R117, 217	1-242-713	47kΩ	L301, 401	1-407-298	trap 4.7mH
R118, 218	1-242-729	220kΩ			
R119, 219	1-242-657	220Ω			
R120, 220	1-242-681	2.2kΩ			CAPACITORS
R121, 221	1-242-691	5.6kΩ	C301, 351)	1-121-391	1μF 50V electrolytic
R122, 222	1-242-661	330Ω	C401, 451)		
R123, 223	1-242-690	5.1kΩ	C302, 352)	1-121-410	47μF 25V electrolytic
R124, 224	1-242-692	6.2kΩ	C402, 452)		
R125, 225	1-221-383	10kΩ (B)	C303, 353)	1-121-413	100μF 6.3V electrolytic
R126, 226	1-242-681	2.2kΩ	C403, 453)		
R127, 227	1-242-707	27kΩ	C304, 354)	1-105-661-12	0.001μF 50V mylar
R128, 228	1-242-725	150kΩ	C404, 454)		
R129, 229	1-242-685	3.3kΩ	C305, 355)	1-107-107	10pF 50V silvered mica
R130, 230	1-242-709	33kΩ	C405, 455)		
R131, 231	1-242-665	470Ω	C306, 356)	1-121-403	33μF 16V electrolytic
R132, 232	1-242-709	33kΩ	C406, 456)		
R133, 233	1-242-661	330Ω	C307, 357)	1-121-416	100μF 25V electrolytic
R134, 234	1-242-673	1kΩ	C407, 457)		
R135, 235	1-242-700	13kΩ	C308, 358)	1-121-398	10μF 25V electrolytic
R136, 236	1-242-649	100Ω	C408, 458)		
R137, 237	1-242-681	2.2kΩ	C309, 359)	1-105-675-12	0.015μF 50V mylar
R138, 238	1-242-673	1kΩ	C409, 459)		
R139, 239	1-242-697	10kΩ	C310, 410	1-107-242	390pF 50V silvered mica
R140, 240	1-242-733	330kΩ	C311, 411	1-121-391	1μF 50V electrolytic
R141, 241	1-242-697	10kΩ	C312, 412	1-121-416	100μF 25V electrolytic
R142, 242	1-242-733	330kΩ	C313, 413	1-105-661-12	0.001μF 50V mylar
R143, 243	1-242-697	10kΩ	C314, 414	1-121-410	47μF 25V electrolytic
R144, 244	1-242-733	330kΩ	C315	1-107-125	56pF 50V silvered mica
R145, 245	1-242-697	10kΩ	C316	1-121-409	47μF 16V electrolytic
R146, 246	1-242-733	330kΩ	C317, 417	1-121-398	10μF 25V electrolytic
R147, 247	1-242-633	22Ω	C318, 368)	1-121-398	10μF 25V electrolytic
R148, 248	1-242-633	22Ω	C418, 468)		
R149, 249	1-242-633	22Ω	C319, 419	1-121-410	47μF 25V electrolytic
R150, 250	1-242-633	22Ω			

PLAYBACK AMP CIRCUIT**SEMICONDUCTORS**

Q301, 351)	transistor	2SC631A
Q401, 451)		
Q302, 352)	transistor	2SC631A
Q402, 452)		
Q303, 403	transistor	2SC634A
Q304, 404	transistor	2SC634A
Q305, 355)	transistor	2SC634A
Q405, 455)		

RESISTORS

All resistors 1/4W, carbon type, unless otherwise specified.

R301, 351)	1-242-666	510Ω
R401, 451)		
R302, 352)	1-242-739	560kΩ
R402, 452)		
R303, 353)	1-242-752	150kΩ
R403, 453)		
R304, 354)	1-242-721	100kΩ
R404, 454)		

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>			<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>													
R506	1-242-725	150kΩ	1/4W	carbon			SWITCHES													
R507	1-242-725	150kΩ	1/4W	carbon	S701	1-514-482	1-key, TAPE SPEED													
R508	1-242-667	560Ω	1/4W	carbon	S702, 703	1-514-728	2-key, REC MODE													
MISCELLANEOUS																				
RY501	1-515-127	relay, 650Ω 24V			AMP CHASSIS CIRCUIT															
HEADPHONE AMP CIRCUIT																				
SEMICONDUCTORS																				
Q601, 602		transistor	2SC634A			R701	1-242-691	5.6kΩ	1/4W carbon											
D601, 602		diode	1T22			R702	1-242-691	5.6kΩ	1/4W carbon											
D611, 612		diode	1T22			R703, 704	1-222-369	20kΩ (A)	variable (MIC)											
TRANSFORMERS																				
T601, 611	1-427-284	headphone				R705, 706	1-222-369	20kΩ (A)	variable (LINE INPUT)											
CAPACITORS																				
C601, 611	1-121-442	1μF	50V	electrolytic	R707		— described in resistor terminal circuit board unit —													
C602, 612	1-121-472	10μF	25V	electrolytic	R708															
C603, 613	1-121-472	10μF	25V	electrolytic	R709	1-242-691	5.6kΩ	1/4W carbon												
C604, 614	1-121-396	4.7μF	50V	electrolytic	R710	1-242-691	5.6kΩ	1/4W carbon												
C605, 615	1-121-442	1μF	50V	electrolytic	R711, 712	1-222-313	50kΩ (B)	variable (SOS & ECHO)												
RESISTORS																				
R601, 611	1-242-681	2.2kΩ	1/4W	carbon	R716	1-242-684	3kΩ	1/4W carbon												
R602, 612	1-242-697	10kΩ	1/4W	carbon	R717	1-242-684	3kΩ	1/4W carbon												
R603, 613	1-242-697	10kΩ	1/4W	carbon	R718, 719	1-222-314	20kΩ (B)	variable (PB)												
R604, 614	1-242-721	100kΩ	1/4W	carbon	JACKS															
R605, 615	1-242-737	470kΩ	1/4W	carbon	J703	1-507-142	phono, LINE INPUT (L-CH)													
R606, 616	1-242-723	120kΩ	1/4W	carbon	J704	1-507-142	phono, LINE INPUT (R-CH)													
R607, 617	1-242-681	2.2kΩ	1/4W	carbon	J705	1-509-029	DIN CONNECTOR, REC/PB													
R608, 618	1-221-997	2.2kΩ (B)	semi-fixed		J706	1-507-142	phono, LINE OUTPUT (L-CH)													
RECORD MODE & SPEED SWITCH CIRCUIT																				
SEMICONDUCTORS																				
D701		diode	10D-2			J707	1-507-142	phono, LINE OUTPUT (R-CH)												
CAPACITORS																				
C701	1-109-501	910pF	500V	dipped mica	J708	1-507-282	binaural, HEADPHONE													
C702	1-105-689-12	0.22μF	50V	mylar	J709		— discarded —													
C703	1-105-689-12	0.22μF	50V	mylar	J710		— discarded —													
RESISTORS																				
R713	1-242-673	1kΩ	1/4W	carbon	J711	1-507-281	miniature, MIC (L-CH)													
R714	1-242-673	1kΩ	1/4W	carbon	J721	1-507-281	miniature, MIC (R-CH)													
R715	1-242-673	1kΩ	1/4W	carbon	CONNECTORS															
SWITCHES																				
S704	1-514-324	slide, TAPE SELECTOR			CN701~705	1-507-300	22P, printed circuit board													
S705		— discarded —			CN706	1-508-400	3P, nylon													
S706	1-514-692	lever, MONITOR			CN707	1-539-437-11	22P, docking; printed circuit board													
S707	1-514-692	lever, MONITOR			CN708	1-508-421	9P, nylon (male)													
METERS																				
ME701	1-524-067	VU			MISCELLANEOUS															
ME702	1-524-067	VU			TM701	1-536-179	terminal strip, 1-L-1													
						1-508-411	terminal, pin (male)													

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>		<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	
LAMPS							
PL701		L-CH VU meter - built in VU meter -				All resistors are $\frac{1}{4}$ W, carbon type, unless otherwise specified.	
PL702		L-CH REC		R001	1-242-697	10k Ω	
PL703		R-CH VU meter - built in VU meter -		R002	1-203-894	3.3k Ω	
PL704		R-CH REC		R003	1-242-721	100k Ω	
RESISTOR TERMINAL CIRCUIT							
RESISTORS							
R707	1-242-721	100k Ω	$\frac{1}{4}$ W carbon	R004	1-242-691	5.6k Ω	
R708	1-242-721	100k Ω	$\frac{1}{4}$ W carbon	R005	1-242-705	22k Ω	
ECHO & SOS CIRCUIT							
CAPACITORS							
C801	1-105-673-12	0.01 μ F	50V mylar	R006	1-242-705	22k Ω	
C802	1-103-863	330pF	50V polystyrol	R007	1-242-709	33k Ω	
C803	1-103-863	330pF	50V polystyrol	R008	1-242-685	3.3k Ω	
C804	1-105-673-12	0.01 μ F	50V mylar	R009	1-242-697	10k Ω	
RESISTORS							
R801	1-242-715	56k Ω	$\frac{1}{4}$ W carbon	R010	1-242-693	6.8k Ω	
R802	1-242-723	120k Ω	$\frac{1}{4}$ W carbon	R011	1-242-673	1k Ω	
R803		- discarded -		R012	1-242-673	1k Ω	
R804	1-242-715	56k Ω	$\frac{1}{4}$ W carbon	R013	1-242-705	22k Ω	
R805	1-242-723	120k Ω	$\frac{1}{4}$ W carbon	R014	1-242-705	22k Ω	
SWITCH							
S705	1-514-693	3 position lever, SOS/OFF/ECHO		R015	1-244-715	56k Ω	
SYSTEM CONTROL (1) CIRCUIT							
SEMICONDUCTORS							
Q001~014		transistor	2SC634	R016		- discarded -	
Q015~018		transistor	2SC756	R017	1-242-715	56k Ω	
D001~039		diode	1T22 (A)	R018		- discarded -	
CAPACITORS							
C001	1-121-398	10 μ F	25V electrolytic	R019	1-244-697	10k Ω	
C002		- discarded -		R020	1-244-697	10k Ω	
C003	1-105-673-12	0.01 μ F	50V mylar	R021	1-244-697	10k Ω	
C004	1-105-673-12	0.01 μ F	50V mylar	R022	1-242-715	56k Ω	
C005	1-121-398	10 μ F	25V electrolytic	R023	1-242-705	22k Ω	
C006	1-121-416	100 μ F	25V electrolytic	R024	1-242-681	2.2k Ω	
C007	1-121-416	100 μ F	25V electrolytic	R025	1-242-705	22k Ω	
C008	1-105-671-12	0.0068 μ F	50V mylar	R026	1-244-697	10k Ω	
C009	1-105-671-12	0.0068 μ F	50V mylar	R027	1-244-697	10k Ω	
C010	1-105-671-12	0.0068 μ F	50V mylar	R028	1-242-715	56k Ω	
C011	1-121-391	1 μ F	50V electrolytic	R029	1-242-705	22k Ω	
				R030	1-242-681	2.2k Ω	
				R031	1-242-705	22k Ω	
				R032	1-244-697	10k Ω	
				R033	1-244-697	10k Ω	
				R034	1-242-705	22k Ω	
				R035	1-242-705	22k Ω	
				R036	1-242-681	2.2k Ω	
				R037	1-242-705	22k Ω	
				R038	1-242-673	1k Ω	
				R039	1-242-705	22k Ω	
				R040	1-242-693	6.8k Ω	
				R041	1-242-697	10k Ω	
				R042	1-242-705	22k Ω	
				R043	1-242-689	4.7k Ω	
				R044	1-242-697	10k Ω	
				R045	1-242-697	10k Ω	
				R046	1-242-673	1k Ω	
				R047	1-242-673	1k Ω	
				R048	1-242-693	6.8k Ω	
				R049	1-242-693	6.8k Ω	
				R050	1-242-693	6.8k Ω	

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>		<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	
R051	1-242-693	6.8kΩ		C18	1-121-416	100μF	25V electrolytic
R052	1-242-705	22kΩ		C19	1-121-398	10μF	25V electrolytic
R053	1-242-705	22kΩ		C20	1-121-398	10μF	25V electrolytic
R054	1-242-693	6.8kΩ		C21	1-105-683-12	0.068μF	50V mylar
R055	1-242-693	6.8kΩ		C22	1-121-403	33μF	16V electrolytic
R056	1-242-693	6.8kΩ		C23	1-121-395	4.7μF	25V electrolytic
R057	1-244-693	6.8kΩ		C24	1-121-395	4.7μF	25V electrolytic
R058	1-242-705	22kΩ		C25	1-121-404	33μF	25V electrolytic
R059	1-242-705	22kΩ		C26	1-121-398	10μF	25V electrolytic
R060	1-242-705	22kΩ					
R061	1-242-705	22kΩ					
R062		— discarded —					
R063	1-244-673	1kΩ					
R064	1-244-673	1kΩ		R1	1-242-677	1.5kΩ	
R065	1-242-673	1kΩ		R2	1-242-689	4.7kΩ	
R066		— discarded —		R3		— discarded —	
R067	1-242-705	22kΩ		R4	1-242-665	470Ω	
R068	1-242-705	22kΩ		R5	1-242-689	4.7kΩ	
				R6	1-222-804	1kΩ (B)	semi-fixed
				R7	1-242-685	3.3kΩ	
				R8	1-242-689	4.7kΩ	
				R9	1-242-705	22kΩ	
				R10	1-242-685	3.3kΩ	
				R11	1-242-705	22kΩ	
				R12	1-242-683	2.7kΩ	
				R13	1-242-681	2.2kΩ	
				R14	1-242-677	1.5kΩ	
				R15	1-242-689	4.7kΩ	
				R16	1-242-705	22kΩ	
				R17	1-242-677	1.5kΩ	
				R18	1-242-705	22kΩ	
				R19	1-242-705	22kΩ	
				R20	1-242-715	56kΩ	
L1	1-407-212	33mH		R21	1-242-709	33kΩ	
				R22	1-242-705	22kΩ	
				R23	1-242-705	22kΩ	
				R24	1-242-719	82kΩ	
				R25	1-242-725	150kΩ	
				R26	1-242-709	33kΩ	
				R27	1-242-699	12kΩ	
				R28	1-242-683	2.7kΩ	
				R29	1-242-683	2.7kΩ	
				R30	1-242-685	3.3kΩ	
				R31	1-242-681	2.2kΩ	
				R32	1-242-697	10kΩ	
				R33	1-242-691	5.6kΩ	
				R34	1-242-705	22kΩ	
				R35	1-242-681	2.2kΩ	
				R36	1-242-715	56kΩ	
				R37	1-242-705	22kΩ	
				R38	1-242-691	5.6kΩ	
				R39	1-242-705	22kΩ	
				R40	1-242-697	10kΩ	

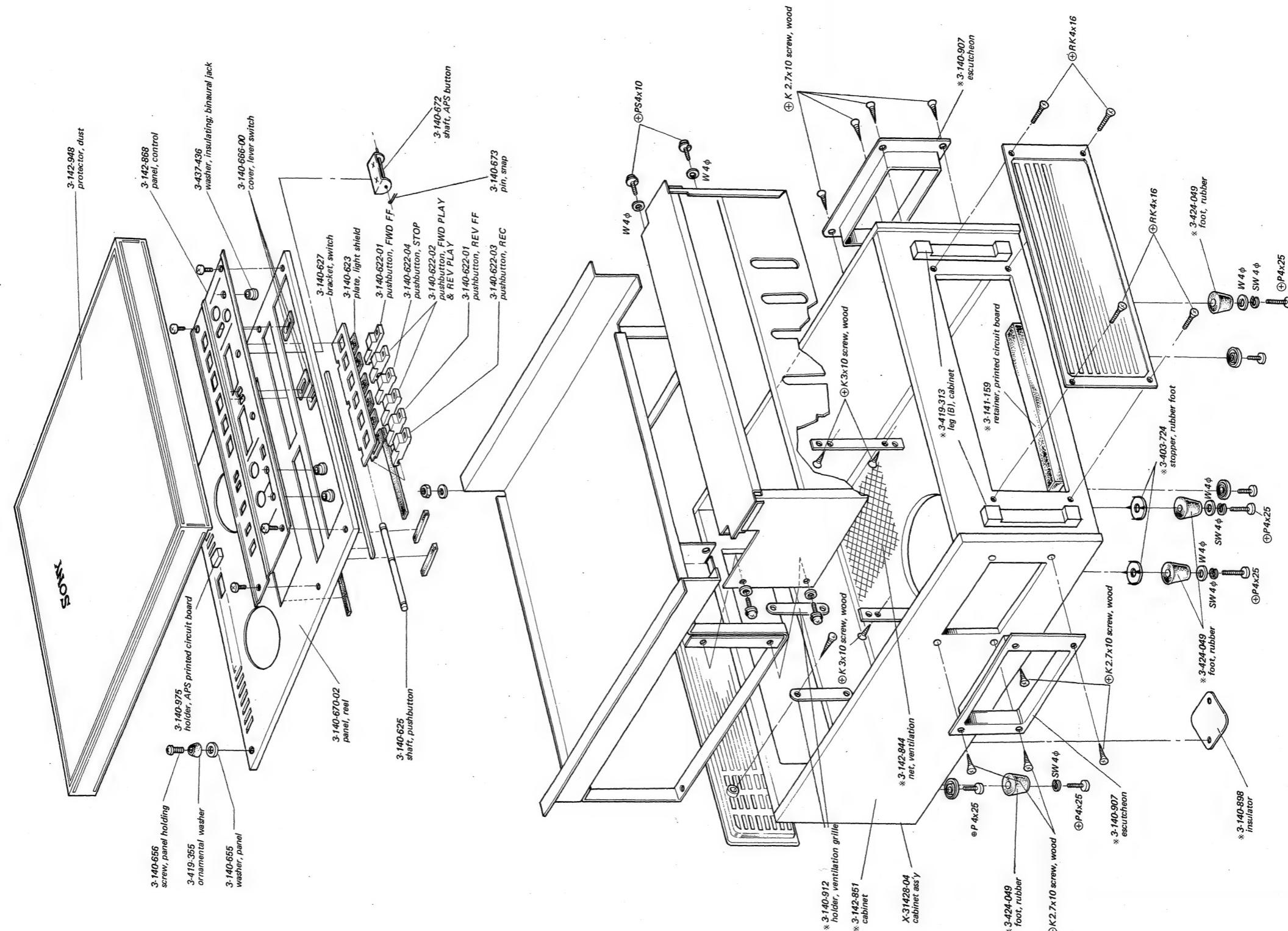
<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>			<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>					
R41	1-242-721	100kΩ					TRANSFORMER					
R42	1-242-721	100kΩ			T801	1-441-650	power					
R43	1-242-721	100kΩ					CAPACITORS					
R44	1-242-673	1kΩ			C801	1-117-040	2μF + 0.5μF	300V, MP				
R45	1-242-697	10kΩ			C802	1-117-054	0.5μF	350V, MP				
R46	1-257-825	10Ω	½W		C803	1-117-054	0.5μF	350V, MP				
R47	1-242-691	5.6kΩ			C804	1-117-082	4μF	250V, MP				
R48	1-242-697	10kΩ			C805	1-117-082	4μF	250V, MP				
R49	1-242-693	6.8kΩ					WIRE WOUND RESISTORS					
R50	1-242-705	22kΩ			R801	1-205-447	50Ω	25W				
R51	1-242-697	10kΩ			R802	1-205-503	68Ω	40W				
R52	1-242-691	5.6kΩ			R803	1-207-273	5.1Ω	1.5W				
R53	1-242-691	5.6kΩ			R804	1-207-273	5.1Ω	1.5W				
R54	1-242-673	1kΩ					CONNECTORS					
R55	1-242-709	33kΩ			CN801	1-509-341	POWER OUTPUT, UNSWITCHED					
R56	1-242-705	22kΩ			CN802	1-509-062	POWER SUPPLY					
SYSTEM CONTROL (3) CIRCUIT												
SEMICONDUCTORS												
D81~85		diode	10D-2		CN803	1-507-300	22P, system control circuit board (1)					
RELAYS					CN804	1-507-300	22P, system control circuit board (2)					
RY81	1-515-127	REW,	680Ω	29.5 mA	CN805	1-507-300	22P, system control circuit board (3)					
RY82	1-515-127	F.F.,	680Ω	29.5 mA			— included in mechanical parts —					
RY83	1-515-127	PLAY,	680Ω	29.5 mA	CN806	1-507-301	18P, head assembly					
RY84	1-515-127	REV,	680Ω	29.5 mA	CN807	1-507-307	14P					
RY85	1-515-127	SPEED,	680Ω	29.5 mA	CN808	1-509-371	3P					
ENCAPSULATED COMPONENTS					CN809	1-509-377	9P, DOCKING, (white)					
CP81~88	1-101-534	0.1μF + 120Ω		500V	CN810	1-509-379	12P, POWER SUPPLY, (red)					
CONNECTORS					CN811	1-509-381	9P, CAPSTAN MOTOR, (red)					
CN81	1-508-417-21	12P	(red)		CN812	1-507-255	11P (socket), REMOTE CONTROL					
CN82	1-508-418-21	9P	(red)		CN813	1-506-180	dummy plug, REMOTE CONTROL					
MISCELLANEOUS												
	1-535-041	pin terminal					SWITCHES					
MECHA CHASSIS CIRCUIT												
SEMICONDUCTORS												
Q801		transistor	2SD28		S801	1-514-057	micro, REC					
Q802		transistor	2SD28		S802	1-514-057	micro, REVERSE FF					
Q803		transistor	2SD28		S803	1-514-057	micro, REWIND					
D801		diode	10D-2		S804	1-514-057	micro, STOP					
D802		diode	10D-2		S805	1-514-057	micro, PLAY					
D803		diode	10D-2		S806	1-514-057	micro, FORWARD FF					
ENCAPSULATED COMPONENTS					S807	1-514-057	micro, APS					
CP801	1-101-534	0.1μF + 120Ω		500V	S808	1-514-693	3-position, lever; AUTO REV					
CP802	1-101-534	0.1μF + 120Ω		500V	S809	1-514-531-12	POWER FREQUENCY					
SOLENOIDS					S810	1-514-531-12	POWER					
					S811	1-509-064	VOLTAGE SELECTOR					
					S812	1-514-530	micro, AUTO SHUT-OFF					

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
MOTORS					
M801	8-836-624-09	reel; induction; left (UC-624K1)			
M802	8-831-634-15	capstan; synchronous (HC-634D6)			
M803	8-836-624-07	reel; induction; right (UC-624K)			
SOCKETS					
PLB1	1-517-018	lamp	D902	diode	10D-2
PLB2	1-517-018	lamp	D903	diode	10D-2
PLB3	1-517-018	lamp	D904	diode	10D-2
PLB4	1-517-018	lamp	D905	diode	1T22 (A)
PLB5	1-517-018	lamp	D906	diode, zener	1S334
LAMPS					
PL801	1-518-053-11	RECORD	D907	diode	10D-2
PL802	1-518-053-11	REWIND	D908	diode	10D-2
PL803	1-518-053-11	REVERSE PLAY	D909	diode	1T22 (A)
PL804	1-518-053-11	FORWARD PLAY	D910	diode	10D-2
PL805	1-518-053-11	FF	D911	diode	10D-2
PL806	1-518-053-11	APS			
TERMINAL STRIP					
TM801	1-536-151	2-L-2			
TM802	1-536-213	5P			
TM803	1-536-179	1-L-1, C type			
MISCELLANEOUS					
F	1-533-048	holder, fuse	R914	1-242-691	5.6 kΩ
	1-532-100	fuse, 2A	R915	1-242-709	33 kΩ
	1-509-372	pin terminal	R916	1-242-705	22 kΩ
	3-140-900	cord, ribbon	R917	1-242-691	5.6 kΩ
HEAD DECK UNIT					
HEADS					
PBH1	8-829-142-20	playback (PP102-4202)	R918	1-242-709	33 kΩ
PBH2	8-829-142-20	playback (PP102-4202)	R919	1-242-705	22 kΩ
REC-H	8-824-629-20	record (RP102-2902)	R920	1-242-697	10 kΩ
ERASE-H	8-826-629-25	erase (EF18-2902A1)	R921	1-242-667	560 Ω
S-H	1-459-051	sensing	R922	1-242-649	100 Ω
			R923	1-242-709	33 kΩ
			R924	1-242-705	22 kΩ
			R925	1-242-705	22 kΩ
			R926	1-242-705	22 kΩ
			R927	1-242-709	33 kΩ
			R928	1-242-704	20 kΩ
			R929	1-242-673	1 kΩ
			R930	1-242-697	10 kΩ
			R931	1-242-709	33 kΩ
			R932	1-242-697	10 kΩ
			R933	1-242-697	10 kΩ
			R934	1-242-709	33 kΩ

TC-651 **TC-65**

8. EXPLODED VIEWS

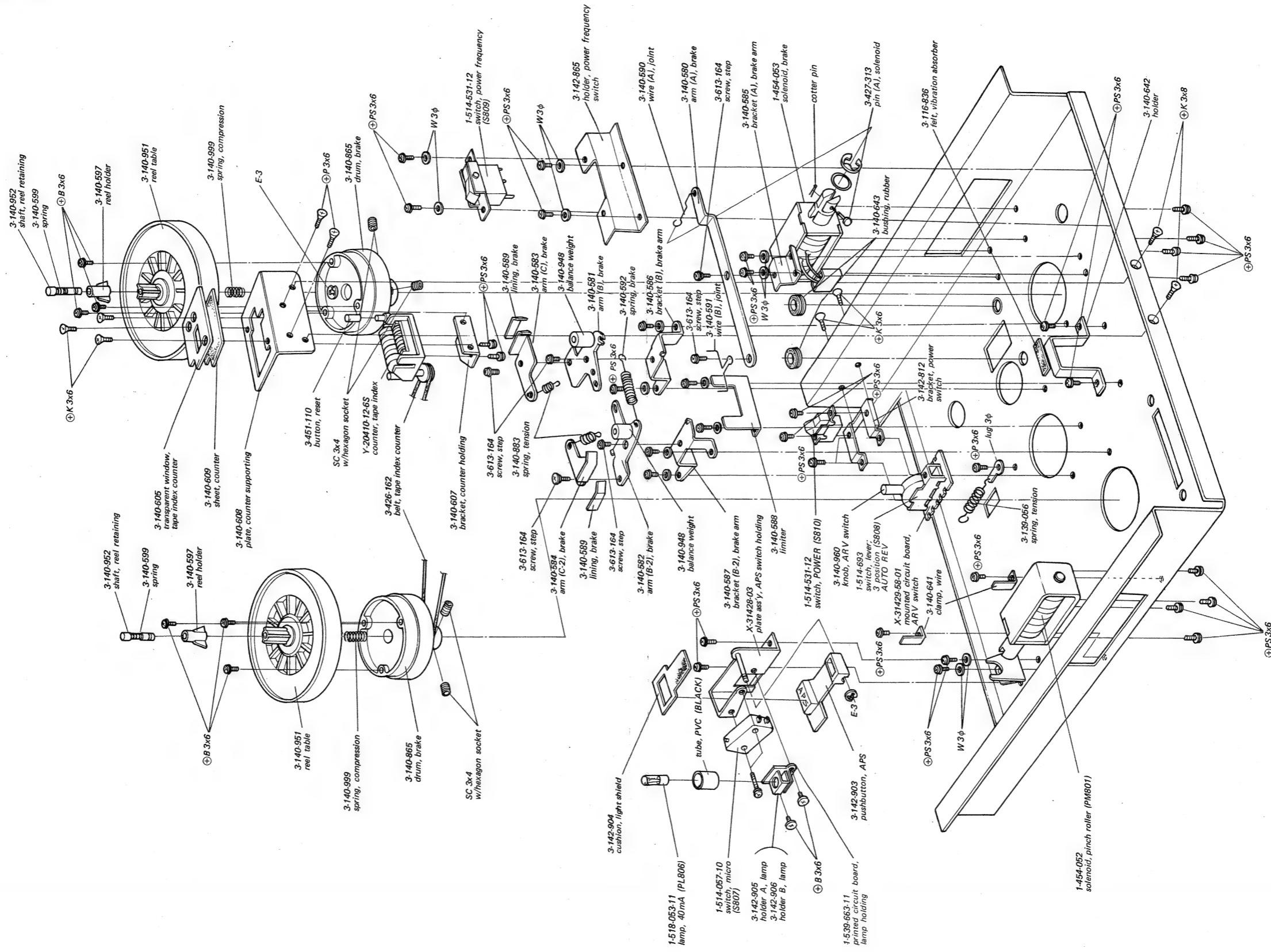
8-1. Cabinet – top view –



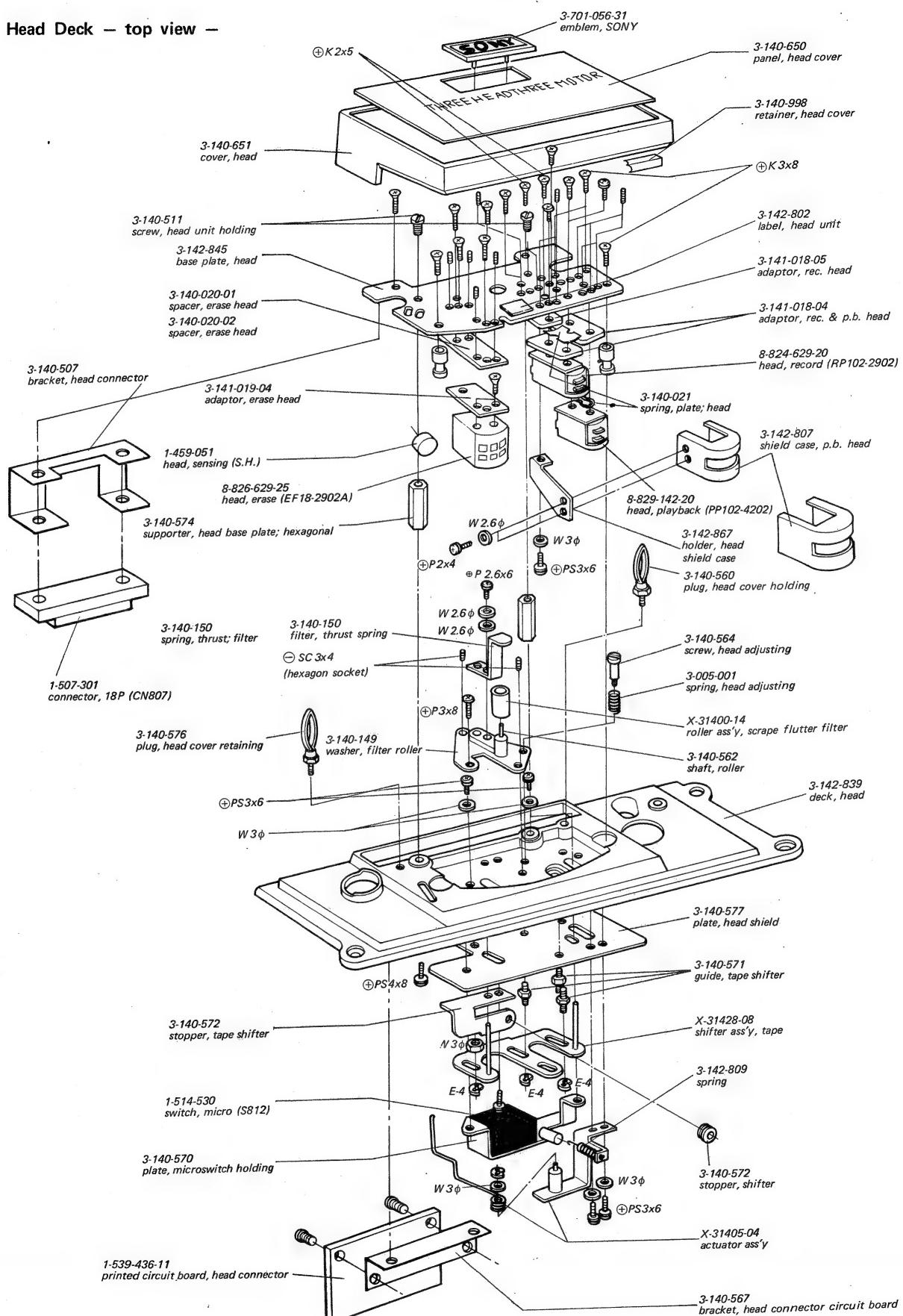
Parts marked with * are included in cabinet ass'y (X-31428-04).

TC-651 **TC-651**

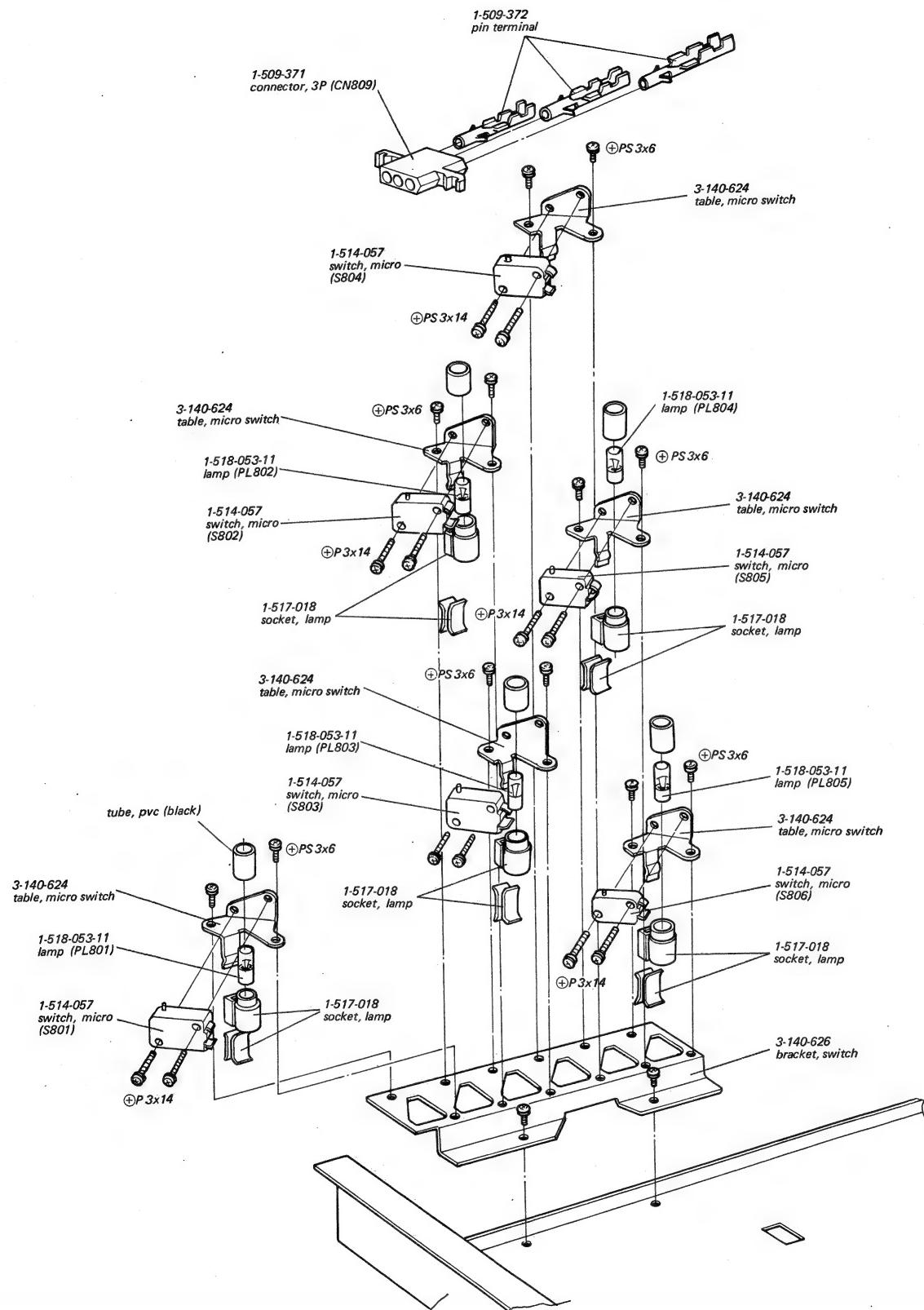
8-2. Chassis – top view –



8-3. Head Deck — top view —

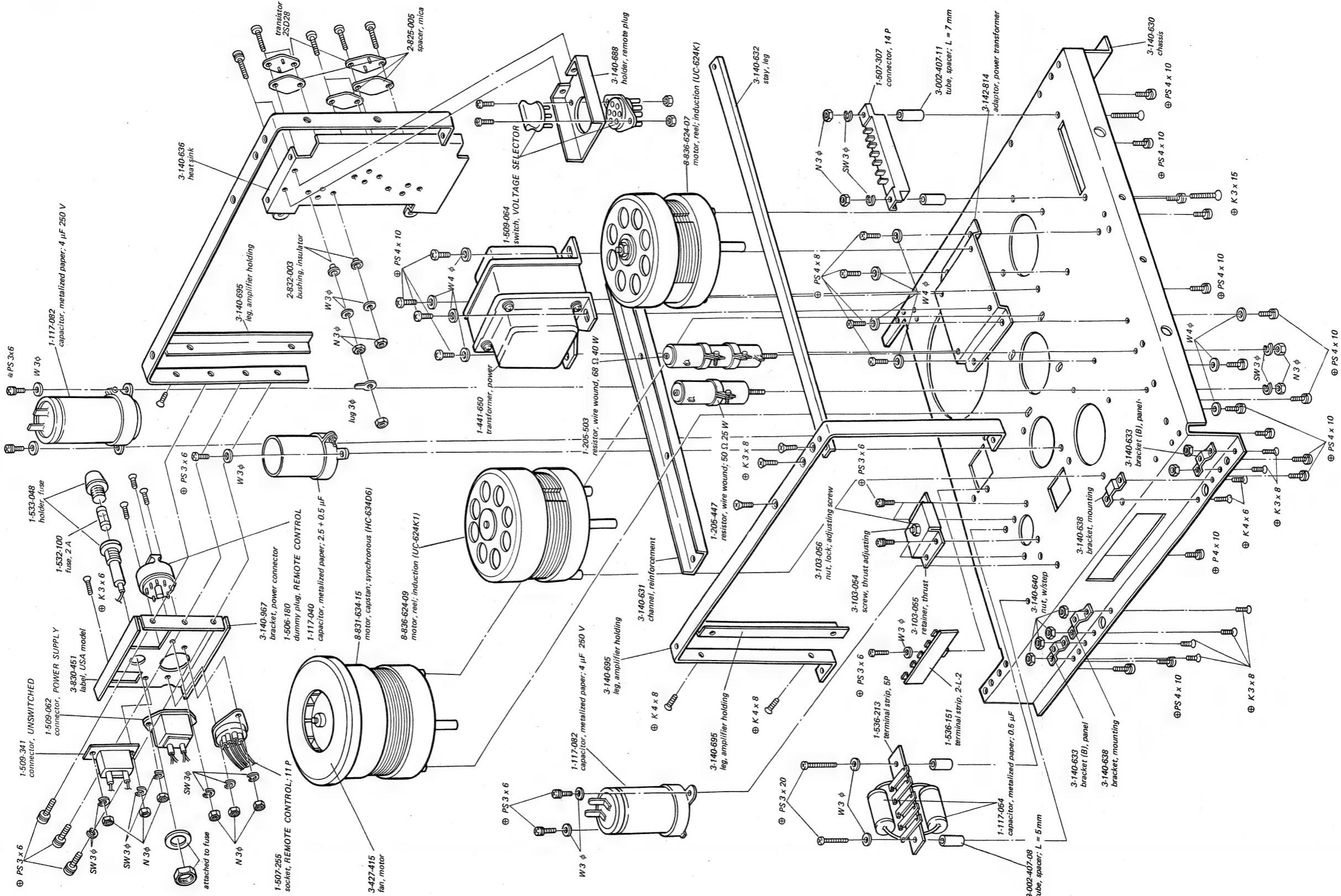


8-4. Microswitches View



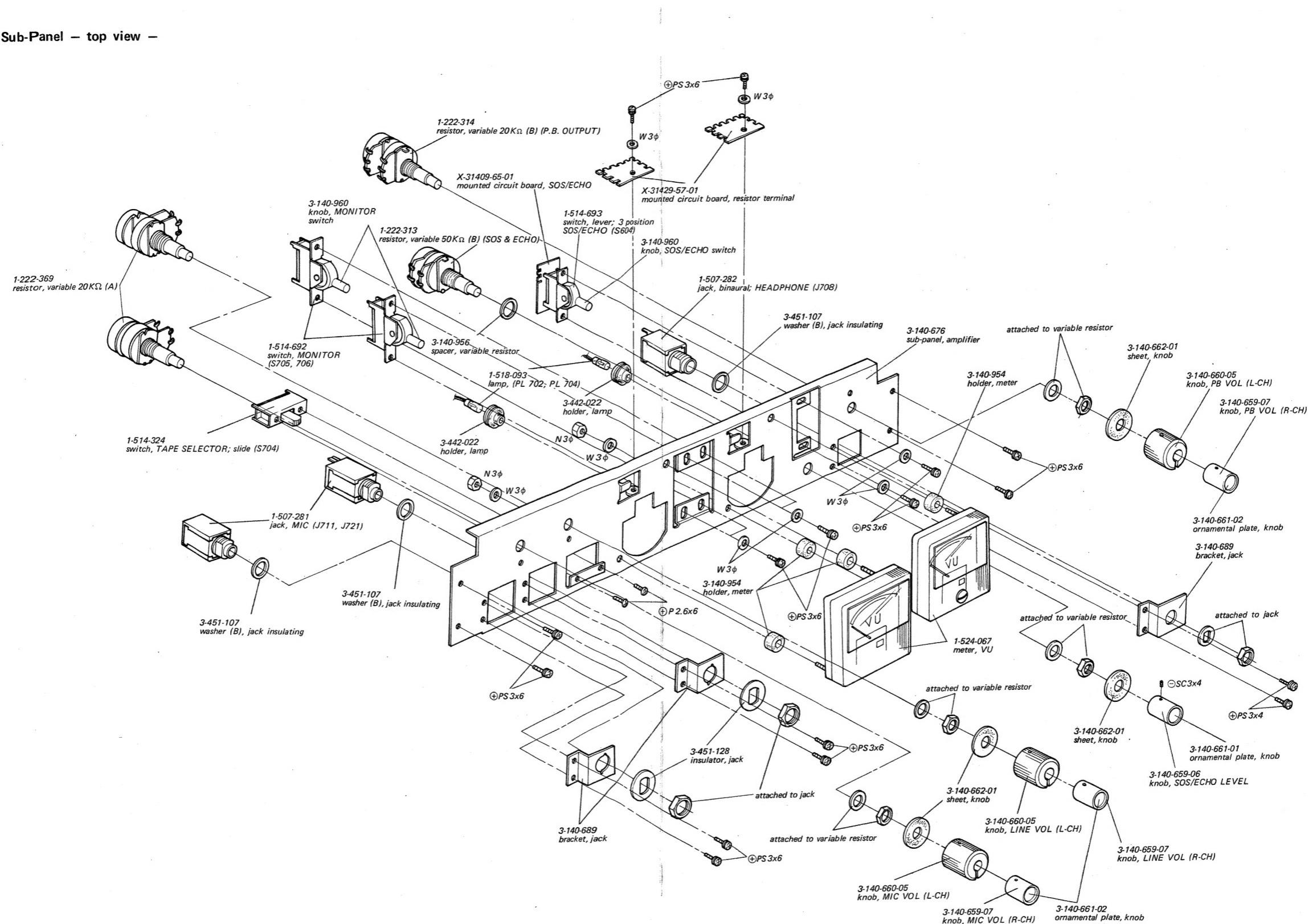
TC-651 **TC-65**

8-5. Chassis – bottom view –



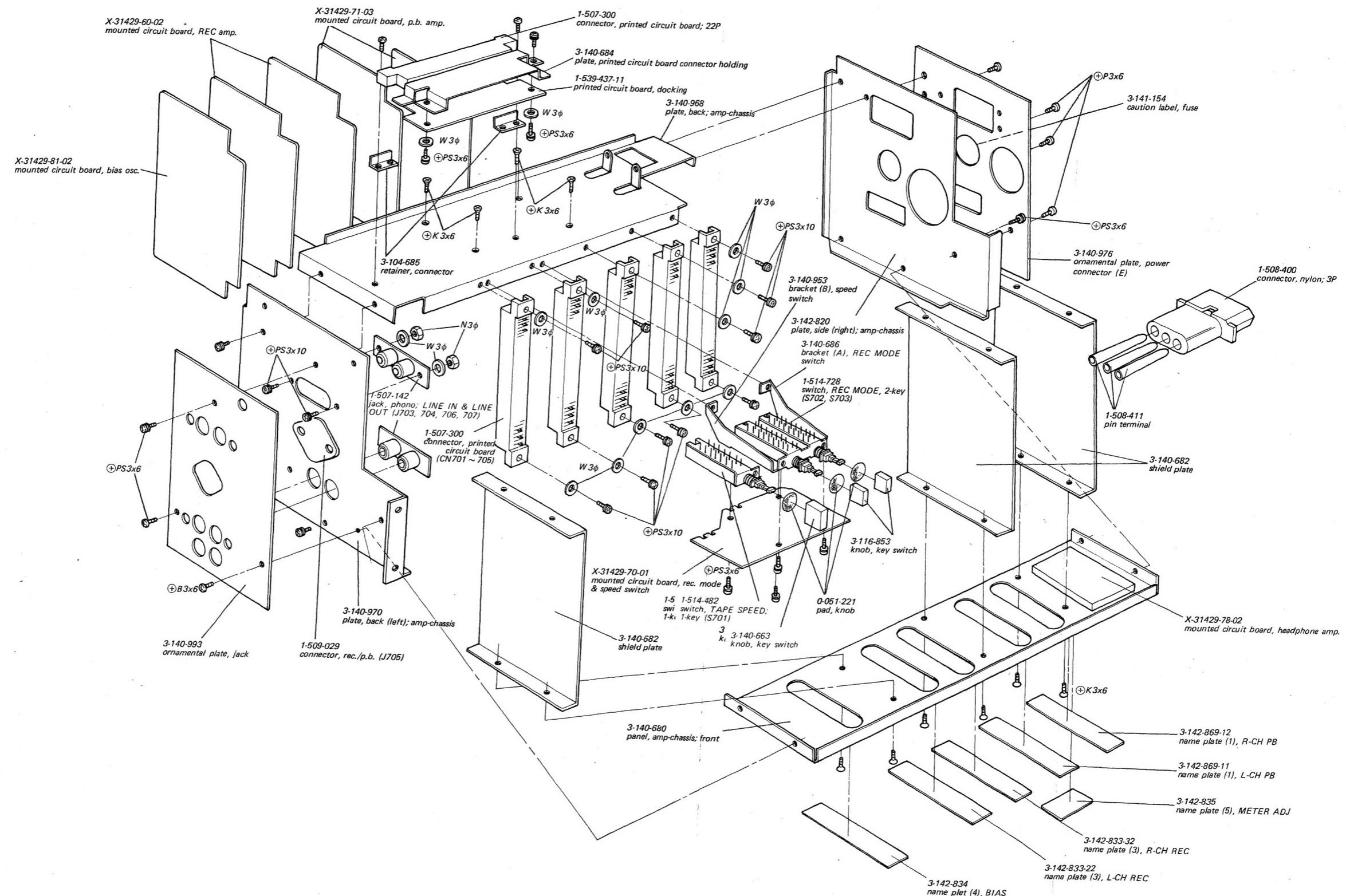
TC-651 **TC-651**

8-6. Amp. Sub-Panel – top view –

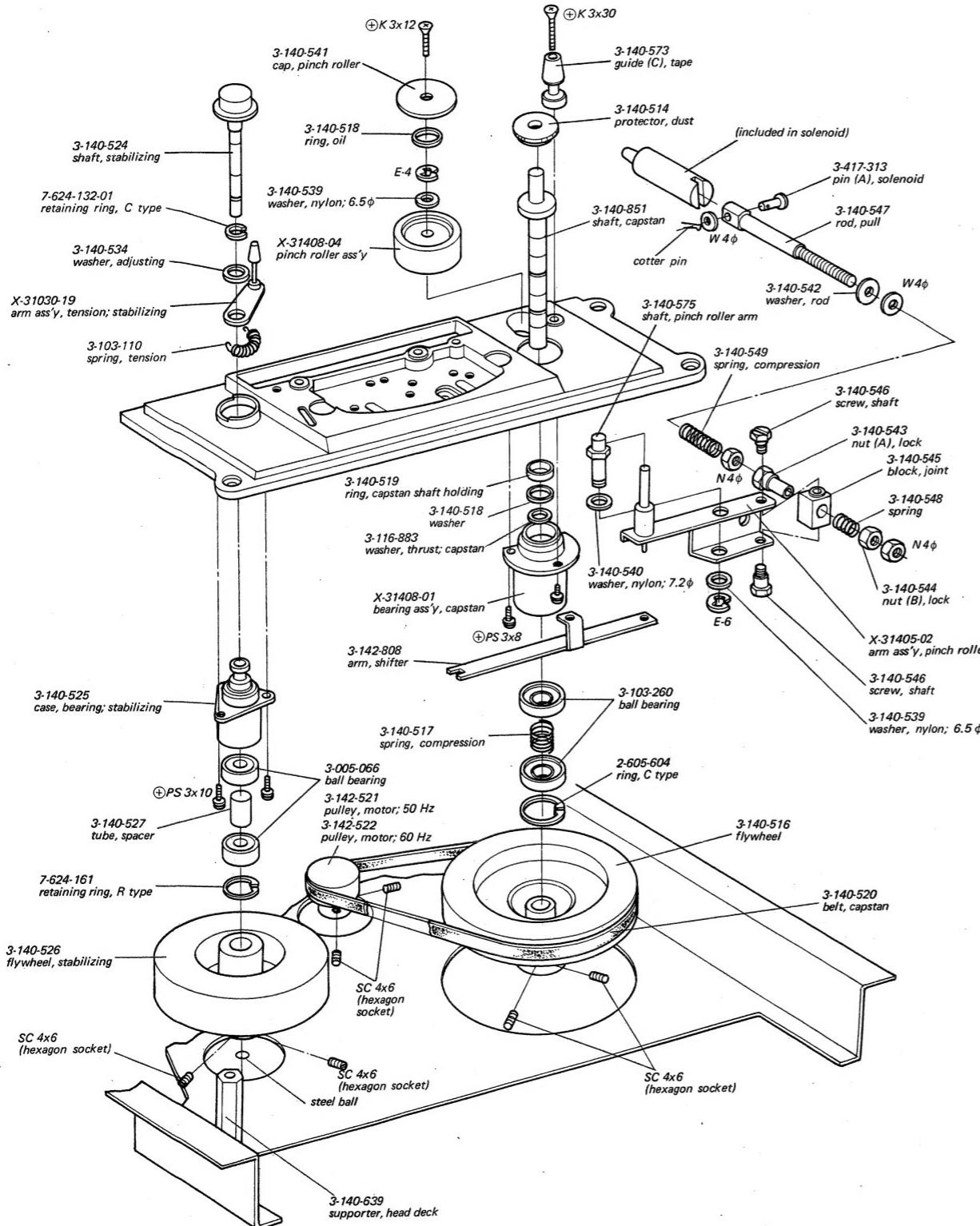


TC-651

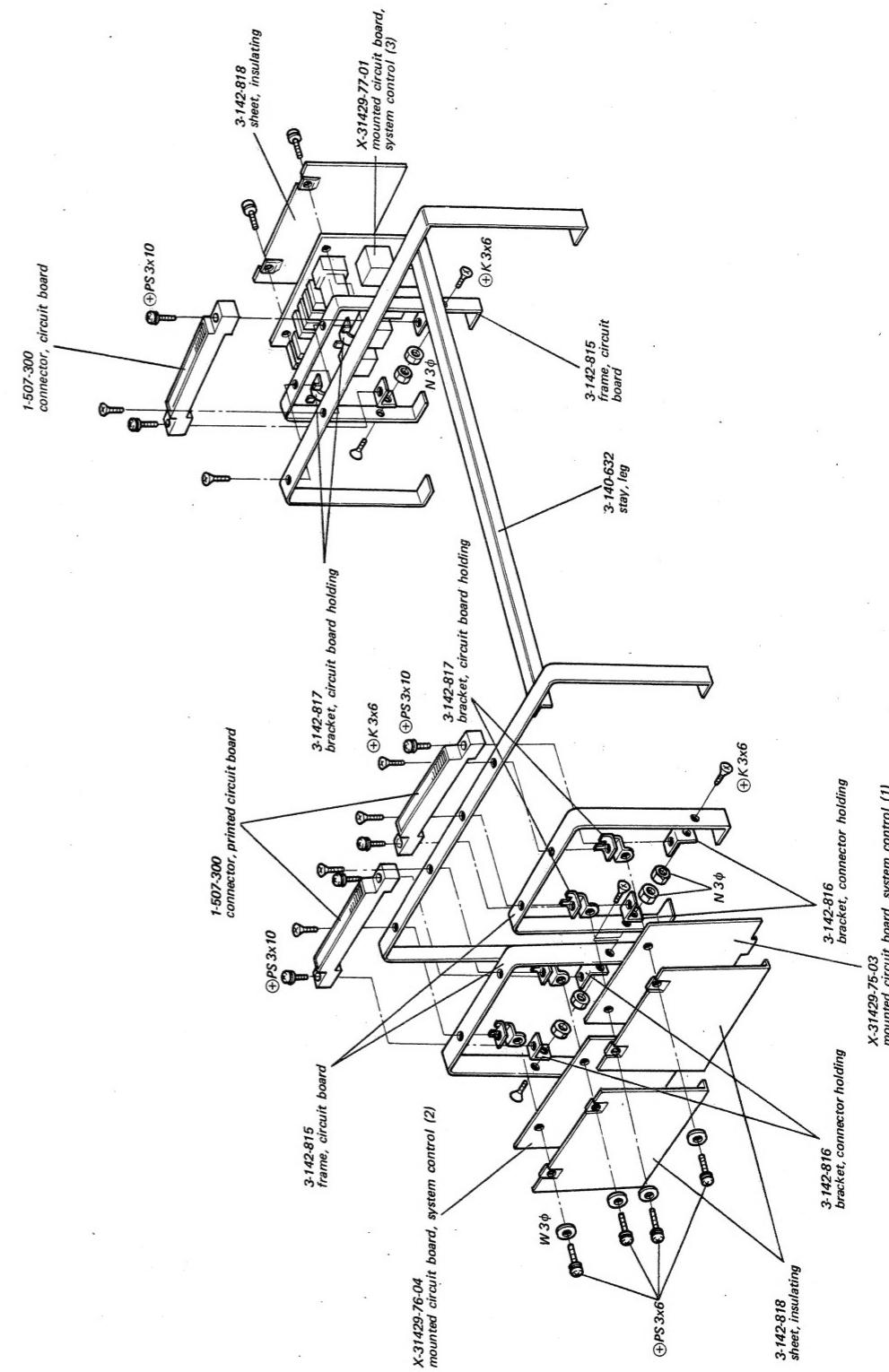
8-7. Amp. Chassis Panel — top view —



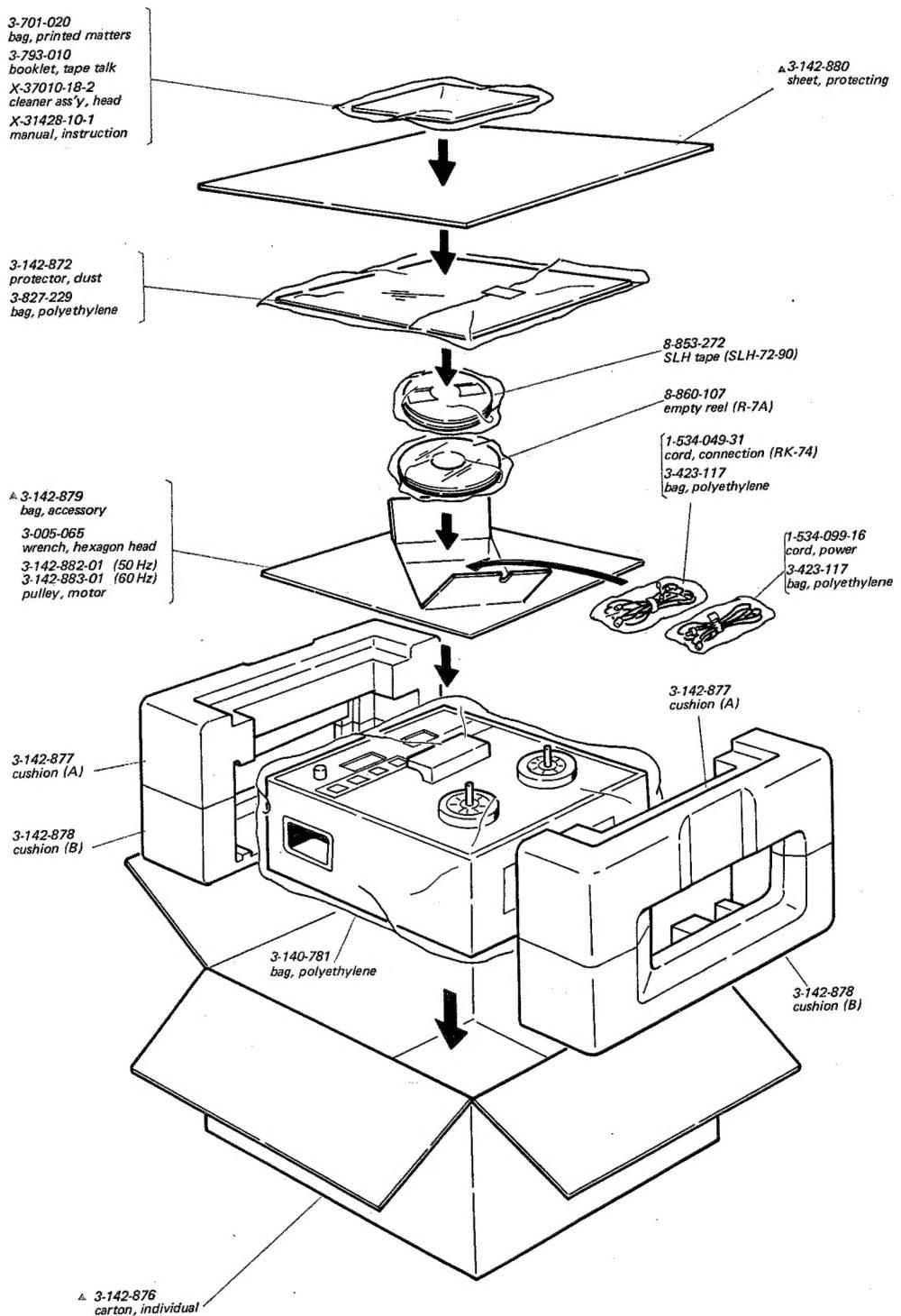
8-8. Flywheel – top view –



8-9. System Control Circuit Boards View



8-10. Packing



Parts marked with △ are included in carton ass'y (X-31428-15).